Elementary Education Online, 2019; 18(2): pp. 600-620
İlköğretim Online, 2019; 18(2): s. 600-620. [Online]: http://ilkogretim-online.org.tr
doi: 10.17051/ilkonline.2019.562025

Meanings and Formats of Classroom Discourse in the Context of Teacher Discursive Moves

Sınıf Söyleminin Öğretmenlerin Söylemsel Hamleleri Bağlamında Anlamları ve Formatları

Yılmaz SOYSAL, *İstanbul Aydın University, Faculty of Education, yilmazsoysal@aydin.edu.tr,* ORCID: 0000-0003-1352-8421

Abstract. The purpose of this study is to establish an argument regarding whether there is a true isomorphism between the formats and the meanings of classroom discourse. The meaning of classroom discourse signifies whether it is dialogic or authoritative (traditional *vs.* co-constructive). The format of the classroom discourse implies the basic unit of analyses of any conversational episode as either in the form of triadic dialogue; Initiate-Response-Evaluate (IRE), or other open-ended chains of IRE-based exchanges. As a general tendency, researchers concluded that the meanings and the formats of classroom discourse should have presumably matched each other. However, a critical examination of related studies, the expected isomorphism or matching may be radically altered and invisible when taking teacher discursive moves for co-construction of knowledge into consideration. Moreover, the concepts as "Learning Demand" and "Productive Disciplinary Engagement" were considered to advocate the argument that teacher discursive moves could be attached with more importance compared to any staged formats of IRE-based exchanges. It was also concluded that particular discursive usage purposes of teacher discursive moves may modify the expected matching between the formats and the meanings of classroom discourse.

Keywords: Classroom discourse, triadic dialogue, teacher discursive moves, critical review

Öz. Bu çalışmanın amacı sınıf söyleminin formatları ve anlamları arasında hakiki bir eş-biçimliliğin olup olmadığına yönelik bir (karşı) tez oluşturmaktır. Sınıf söyleminin anlamı diyalojik-monolojik ya da geleneksel-oluşturmacı zıtları ifade eder. Sınıf söyleminin formatı ise herhangi bir etkileşimli konuşmanın temel analiz birimi olan Başlat-Cevapla-Değerlendir (BCD, üçlü diyalog) ve açık uçlu BCD-temelli söylemsel değişimleri ifade eder. Genel bir eğilim olarak, araştırmacılar sınıf söyleminin formatlarının ve anlamlarının büyük bir olasılıkla eşleştiği yönünde bir uzlaşmaya varmışlardır. Ancak, ilgili çalışmaların eleştirel bir analizi, beklenen eşleşmenin öğretmenlerin söylemsel hamleleri göz önünde bulundurulduğunda radikal bir biçimde değişebileceğini ve yok olabileceğini göstermiştir. Bununla birlikte, Öğrenme Talebi ve Alan-Bağımlı Üretken Dahil Oluş gibi sınıf söyleminin temel teorilerinin yukarıdaki tezi desteklediğini ve öğretmenlerin söylemsel hamlelerinin herhangi bir BCD-temelli söylemsel değişimden daha önemli olabileceğini göstermiştir. Ek olarak, öğretmenlerin belli başlı söylemsel hamleleri özellikli sergileyiş biçimlerinin, sınıf söyleminin formatları ve anlamları arasındaki ilişkiyi ya da eşleşme durumunu değiştirebileceği sonucuna ulaşılmıştır.

Anahtar Sözcükler: Sınıf söylemi, üçlü diyalog, öğretmenin söylemsel hamleleri, eleştirel derleme

Received: 02.11.2017 Accepted: 30.01.2019 Published: 15.04.2019

INTRODUCTION

The basic approach to fragment teacher-student discursive exchanges is triadic dialogue (Mercer and Dawes 2014) denominated as Initiation-Response-Evaluation (IRE). In this formation of exchange, teacher initially triggers a conversation through, for instance, a question, students then provide a response, and lastly teacher evaluation of the student's response occurs (Lemke 1990; Mehan 1979; Sinclair and Coulthard 1975). In the third turn, teacher may provide an evaluation as well as offer a follow-up statement or another question; if not, she or he may give a feedback. Therefore, IRE-based exchanges may be changed into IRF where F stands for follow-up or feedback.

The instructional uses of triadic dialogue have been subjected to extensive criticisms, however. First and foremost, IRE-based exchanges have not been enquired in a sense that making an attachment of teacher talk to student talk (Aguiar, Mortimer and Scott 2010; Cazden 2001; Duschl and Gitomer 1997; Lemke 1990; Orsolini and Pontecorvo 1992). In other words, the dependency between teacher talk (e.g. teacher discursive moves) and student talk have been absent in the most of IRE-based studies as reported in several studies (Sunderland 1996, 2000; van Zee, Iwasyk, Kurose, Simpson and Wild, 2001; van Zee and Minstrell 1997a).

Presumably, attaching teachers' discursive moves to students' talk represents many aims. For instance, within an array of IRE-based exchanges, teacher may follow up students' statements and make reflective judgments (e.g. van Zee and Minstrell 1997a). A reflective judgment can be played out by a particular teacher discursive move such as toss-back. When a teacher performs a toss-back move, she executes a second contingent utterance on the previous student-led utterance. In many classrooms, it is not the case, however. As Duschl and Gitomer (1997) stated "Teachers are not used to using student information to guide and revise instructional decision making." (p. 65). In this context, student information consists of students' (novice) ideas, (naïve) patterns of reasoning or (fallacious) arguments. In a similar vein, Orsolini and Pontecorvo (1992) indicated that IRE-based exchanges are "unrelated to the communicative function of utterances and to their sequential implications." (p. 115).

In a responsive manner, scholars recommended structurally different patterns to put a new lens to monitor teacher-student discursive interactions, for instance; Initiate-Response-Feedback/Follow-up (Mehan 1979; Sinclair and Coulthard 1975); Identification, Interpretation-Evaluation, Response (Louca, Zacharia and Tzialli, 2012) or open-ended patterns of interaction (Mortimer and Scott 2003). As a consequence, IRE-based exchanges were varied regarding its structural formations. In this sense, several studies' results obviously indicated that unconnected teacher-student discursive interactions may be a format (structural) issue. Explicitly, the more open-ended IRE-based exchanges (IRF, IRFRFRF…; F-move means follow-up questioning or constructive feedback) refers to the more co-constructive teacher-student discursive interactions. However, the more solid and closed-ended IRE-based exchanges represent a more one-way transmission of knowledge. In a similar vein, the educational remarks of the studies also favour the idea that when formats of IRE-based exchanges are retuned, teacher's talk can be attached to students' talk. This typifies the format of the classroom discourse.

The meaning of classroom discourse is another aspect that may be independent from the formats of classroom discourse. To advocate, a teacher may pose several open-ended questions (Initiation move) to trigger and maintain a classroom discourse. Nevertheless, maintaining teacher-student discursive interactions through *only* open-ended questions may not ensure the authentic contributions of learners to classroom discourse (e.g. Boyd and Rubin 2006). However, IRE-based exchanges by means of close-ended questions of teacher may be displayed in classroom pervasively and students may truly contribute to the discourse while co-constructing shared knowledge (e.g. Molinari, Mameli and Gnisci 2013). There is therefore a contradiction between the two depicted examples of the flow of the classroom discourse. The basic reason of this dilemma may be explained by the non-contingency of open-ended questions that are based upon non-IRE-based exchanges and contingency features of close-ended questions that are guided by IRE-based exchanges (Boyd and Rubin 2006; Nassaji and Wells 2000).

In this context, two distinctive theses may be established regarding the meanings and the formats of classroom discourse. The current study's theory-driven two *theses* were the isomorphism thesis and the non-isomorphism thesis. The isomorphism thesis characterizes that the meaning and the format of classroom discourse may be matched with each other. Isomorphism thesis stands for IRE-based exchanges as the format(s) of the classroom discourse become partners with knowledge-transmission modes of teaching. To put it differently, when a teacher frequently plays out solid IRE-based exchanges during the classroom discourse, it is acknowledged that there is a knowledge-transmission mode of teaching. On the other hand, non-isomorphism thesis advocates that the meaning and the format of the classroom discourse may not be matched with easily in a discursive context. In other words, IRE-based exchanges can be paired both knowledge transmission modes of teaching and teaching through knowledge co-construction. In other words, the more open-ended interactions (e.g. over numbers of open-ended questions) between teacher and students can also be corresponded to knowledge transmission modes of teaching instead of its anticipated outcome as co-construction of knowledge.

The underlying reason of the non-isomorphism thesis should be explained through the sophisticated and combined usages of teachers' discursive moves. Put it differently, not only technical or mechanical discursive structures of classroom discourse (e.g. pervasive IRE-based exchanges), but the qualities (different discursive uses of particular teacher discursive moves) and the contingency of teacher discursive moves (meanings of classroom discourse) may play a key role in bringing productive discursive moments into action. Therefore, the purpose of the study is to construct an argument that whether teachers' discursive moves' discursive usage purposes may modify and moderate the occurrences and the instructional targets of the formats and the meanings of classroom discourse. In this sense, the research questions of the study were that:

1. In which ways and contexts, the formats and the meanings of classroom discourse may be matched and isolated from each other?
2. What may be the discursive moves of the teacher in modifying and moderating the isomorphism thesis or the non-isomorphism thesis?

Justification and Significance of the Review

In classrooms, teachers have two-faceted pedagogical and intellectual accountability. The first accountability of a teacher is discerned as s/he has to consider the ideas, arguments, sayings, and viewpoints of students to initiate and maintain classroom discourse (Mortimer and Scott 2003). To advocate, students may have alternative thinking and talking systems that are not similar to experts' or scientists' formalised terminologies (Mortimer 1998). For instance, learners may use such expressions as "…Plants feed on the earth." or "…You've consumed my energy today." Both of which are far remote from being scientifically appropriate, but learners, using this everyday language, may express the occurrences in their environment, and not feel discomfort for this fallacious language. For this example, on the other hand, an expert in plant physiology explains the feeding of plants by photosynthesis phenomenon as an array of chemical processes and equations. Moreover, an expert of thermodynamics proposes alternative arguments about the used-up (human) energy and explicates this phenomenon by energy transformation concepts and equations. Thus, teachers have a second accountability for instructing canonical knowledge of science. Put it differently, a teacher has to take into both parts of thinkers' languages (pupils and experts) into account (Mortimer and Scott 2000).

Within an instructional sequence, expectedly, there may be discursive moments in which students' ideas and arguments should be prioritized even though they may be naïve and have less explanatory power. In some other parts of classroom discourse, when students gradually appropriate and internalize, others' (e.g., experts or scientists) alternative and novel ideas that may have more explanatory power can be acknowledged and embraced (Vygotsky 1981, 1987). However, if this is the case of the classroom discourse, it seems impossible for teachers to only play out open-ended exchanges with students (e.g., initial negotiations of meaning) or pervasive IRE-based exchanges (teacher-led wrap-ups and reviews). For the first accountability,

considering initial ideas of learners to trigger the negotiation of meaning, more open-ended discursive exchanges should be performed by teacher implying non-isomorphism thesis of the current study. For the second accountability, teachers also should put forward canonical knowledge of science during classroom discourse, after students comprehend that their pre-explanations are unsatisfying in illuminating for instance nourishment of plants or energy transformations.

In this sense, it can be asserted that the co-existence of the non-isomorphism thesis and the isomorphism thesis appears to be crucial for an authentic classroom discourse in which meaningful learning is attained. To advocate, during a classroom discourse, teachers have to use the student-led information as in the form of their alternative thinking and talking systems. However, students need to alternative thinking and talking systems experts or scientists have constructed and applied to perceive a phenomenon in a different and more plausible manner.

Thus, a pedagogical and discursive tension would be emerged for the part of teachers. In the first place, teachers have to make a decision which thinking and talking system will be first prioritized, then, replaced with an alternative, but plausible one. In this context, if a teacher prefers to start with the formalized thinking and talking systems scientists or experts enhanced and used, the meanings and the formats of the classroom discourse would be inherently matched and isomorphism thesis would be eventually taken-for-granted. In the presence of close-ended IRE-based exchanges, a teacher may have chance to lecture the content directly to students. Since, the student-led voices would be dominated by the close-ended IRE-based monologues. Thus, isomorphism thesis only consists of the teacher.

When teachers bear the student-led voices or information in mind, domination of the student-led voices would be ameliorated. However, when the all responsibility of the classroom discourse is imputed to students, by means of recurrent open-ended IRE-based exchanges, the end purpose of the classroom discourse would be suffered from vagueness. Since, students have also accountability to recognize the other or alternative thinking and talking systems that they try to acknowledge, recognize, internalize and appropriate. In a simplistic sense, students may need to wrap-ups or reviews of the teacher that are alternative and more plausible ways of experiencing the phenomenon under negotiation. But, as pedagogically and discursively acknowledged and supported, the wrap-ups and reviews of the teachers must be the end of the classroom discursive events just after the previously occurred discursive events that are mainly executed by the collective efforts of students (Mortimer and Scott 2003).

In conclusion, the classroom discursive events may be more complicated than we suppose and there must be overlapping discursive exchanges in responding the multifaceted accountabilities of classroom discourse. In this context, this study tried to establish an array of arguments incorporating isolated and exclusively mutual existences of the IRE-based exchanges of classroom discourse, and, as an alternative idea presented in this study, the need of the overlapped and the hybrid co-existence of the IRE-based exchanges. The former one includes only the isomorphism thesis clarifying knowledge-transmission modes of teaching formats are only possible in the presence of the close-ended and pervasive IRE-based exchanges in which only teacher-led ideas, arguments, sayings and utterances are prioritize and legitimated. On the other hand, for the latter one, both the isomorphism thesis and the non-isomorphism thesis are required for reflecting both parts of classroom discourse as learners' mostly naïve and novice thinking and talking systems as an alternative to scientists' or experts' (e.g. teachers) thinking and talking systems.

METHODOLOGY

This study presents a critical review of the studies regarding the classroom talk (classroom discourse) in terms of IRE-based exchanges and their distinctive discursive usages. In this section, two specific features of the methodology of the current study will be justified. At the outset (as Phase-1), I decided which studies that were subjected to a systematic review would be included in the study or which of the studies that do not inform the current study should be eliminated. Secondly (as Phase-2), after a careful selection and elimination, a thinking tool or a

theoretical framework was invented to analyse and interpret pooled studies to develop and reinforce the theses of the current study.

Phase-1: Systematic Selection of the Related Studies

For a systematic review or locating the studies in favour of hypothetically-based assertions attained in this study, the basic criterion was to clarify "eligibility". Eligibility refers to the theory-laden or intervention-based appropriateness of the selected studies that are thought to be included in a study or which studies will be excluded from the systematic review (Abrami, Cohen & d'Apollonia, 1988). For many systematic and purposeful reviews, the most important question that a researcher should ask to herself or himself is to which studies are more potential or eligible in including to the pool of the studies (Gliner, Morgan & Harmon, 2003; Lin, Lin & Tsai, 2014; Suri & Clarke, 2009). One of the surrounding eligibility criteria can be deduced from operational definitions of concept(s) under examination (Abrami, Cohen & d'Apollonia, 1988).

In this study, three featured themes had framed the researcher's mind to select or exclude a research study. These themes are operationally defined within above section and can be listed as **"classroom discourse"**, **"triadic dialogue"** and **"teacher discursive moves"**. The inclusion of a research study was mainly determined whether the study incorporates these themes. To put it differently, three themes were handled as the fundamental characteristics of conversational or interactional process. As a rational, therefore, a *fine-grained griddle* was composed to filter proper studies from improper ones.

Technical procedures were operated for capturing the most relevant studies. In searching of related literature, computerized data bases and functional digital operators (e.g., ERIC; Boolean Operator) were used to filter out the appropriate studies. The search was conducted in 2017 through considering specific keywords: "discursive moves", "initiate-response-evaluate", "patterns of interaction", "discursive roles", "classroom discourse", "triadic dialogue", "chains of interactions", "classroom talk", "dialogue", "monologic", "dialogic" or other synonym and related terms were used in a combined, systematic and pragmatic manner. Primary and secondary references were limited to peer-reviewed academic journals and extended reports that were delivered by well reputed publishers. The author accounted for the diversity regarding types of selected journals to grasp different scholar-led voices regarding classroom discourse, triadic dialogue and teacher discursive moves.

For a systematic sampling of the current research, the author strictly took two aspects of the selected studies into account. At first, selected studies should be devoted to improvement of the theory of science education pertaining classroom talk in general. Secondly, the studies were particularly selected by checking a criterion whether they explored any sets of tools for classroom discourse, teacher discursive moves and triadic dialogue in an explicit manner. It was also a matter of selection whether the pooled studies incorporated diversifying participants as students who were varying in terms of academic grades such as secondary science classrooms (Mortimer & Scott 2003) or middle school level (Chin, 2006; 2007). Finally, techniques of analysis of the classroom talk (conversational analysis, sociocultural discourse analysis, systematic observation, interactional analysis etc.) taken by the pooled studies were another criterion. To explain, some studies delved into classroom talk by analysing episodes in an interpretivist sense (qualitatively-oriented) and other studies operated (lag) sequential analysis techniques to attain a systematic observation through coding-counting (quantitatively-oriented). This type of systematic determination of the studies holds two purposes. Firstly, there was a better sampling of the related studies that were considerably representative as the selected works reflected both past and current streaming of the research on classroom talk. Secondly, the systematic approach was useful in re-categorising the detected findings and outcomes around newly invited theoretical frames (e.g., learning demand, productive disciplinary engagement), thus, incorporated a pragmatist approach in determining and analysing an intensifying research area.

Phase-2: Analysis of the Selected Research Studies by Inventing a Thinking Tool

Three framing lenses were continuously considered and applied in selecting, appropriating, analyzing and interpreting the findings of the pooled studies. In this review, the studies were searched and interpreted based on the three frames displayed in Table 1.

Table 1. *A three-faceted framing tool for analyzing and interpreting the related studies*

Categorisation of the Studies: IRE-based exchanges	Arguments Embedded in the Selected Studies	Sample Studies
The studies implicitly or explicitly supporting co-existence of the isomorphism thesis and the nonisomorphism thesis	Dialectical teacher discursive moves are matched with teaching methods requiring co-existence of overlapped monologic and dialogic teacher discursive moves	Lefstein, Snell and Israeli (2015); Boyd and Rubin (2006); Molinari, Mameli and Gnisci (2013)
The studies implicitly or explicitly supporting the nonisomorphism thesis	Dialogic teacher discursive moves are matched with learner-centred modes of teaching	Martin and Hand (2009); McNeill and Pimentel (2010)
The studies implicitly or explicitly supporting the isomorphism thesis	Monologic teacher discursive moves are matched with knowledge-transmission modes of teaching	Kawalkar and Vijapurkar (2013); Erdogan and Campbell (2008)

In analyzing and interpreting the related studies, the three-faceted framing was considered. As seen in Table 1, there was a categorisation of the studies. The first category consisted of the studies that implicitly or explicitly supporting the isomorphism thesis (Leach and Scott 2002; Scott 1998; Scott, Mortimer and Aguiar 2006). The second category of the studies included the studies advocating the nonisomorphism thesis (Boyd & Rubin, 2009). The last group of the studies incorporated the studies implicitly or explicitly favouring the co-existence of the isomorphism thesis and the nonisomorphism thesis (Molinari et al. 2013). These three frames were also attached to the extracted arguments that were derived from the findings of the studies. In other words, the studies regarding IRE-based exchanges were mostly conducted through researching into for instance the teacher discursive moves. Three associated arguments were therefore collapsed to analyse and interpret the findings of the selected studies.

Establishment of a three-faceted framing tool was a result of fine-grained analysis of theory-based arguments embedded in the selected, analysed and interpreted studies. In the context of this study, this framing tool was first derived from the existence literature on IRE-based exchanges and teacher discursive moves altering the meanings of classroom discourse. Then, the same framing tool was also applied for critically re-analyse the relevant studies to generate alternative arguments attained in this study.

FINDINGS AND DISCUSSION

Pedagogical prospects of IRE-based exchanges and (in)congruity conditions

Sinclair and Coulthard (1975) proposed that E-move (Evaluation) should be replaced with F-move (Follow-up or supporting feedback). Playing out follow-up moves instead of firm judgments, teachers may externalize student ideas, guide them generate hypothesis and test them (Wells 1986; Chin 2006, 2007). Accordingly, even though F-move is a small replacement, its effects may be greater on students' deeper thinking and undertaking active roles in contributing to classroom discourse (Chin 2006; van Zee 2000). To explain, evaluative fashion of teacher and its inherent epistemic and social dictations are comparatively vanished when teachers apply F-move in a responsive manner (Hogan, Nastasi and Presley 2000).

Similarly, Roth (1996) corroborated that teachers may employ IRF-based exchanges in a more generative mode. F-move can be functioned as a pedagogical scaffolding to stimulate student's further thinking and talking. In addition, F-move may also provide a revoicing mechanism for teachers. When teachers revoice a student's response through F-move in a responsive manner, his or her idea may be available for other members of classroom. Since, the student's utterance would be common knowledge of the classroom as the teacher had previously explicitly shared with and announced the utterance to class (Edwards and Mercer 1987). Also, revoicing mechanism may supply verbal scaffolding by boosting the discourse of students with weak verbal abilities (Chapin, O'Connor and Anderson 2003).

In a similar vein, van Zee and Minstrell (1997a) reported that teachers may carry through IRE-based exchanges more potently by following a neutral stance instead of appropriating an evaluative manner. van Zee and Minstrell (1997a) defined reflective toss as a teacher discursive move in which the teacher gives the responsibility of thinking and talking to students by reposing a contingent question in response to prior utterance of students. Reflective toss consists of three components: a student statement (SS), a teacher question (TQ) and additional student statement (aSS). In SS-TQ-aSS sequence therefore IRE-based exchanges are inherently disappeared. In SS-TQ-aSS triadic dialogue the flow of discursive events is considerably reformatted, since; teacher-led utterances are acted upon the students' previous utterances. Two distinctive conversational flows are displayed in Figure 1 represented as *Conversation Box* in order to clarify the point described above.

Conversation-I and Conversation-II characterize exclusively mutual classroom discourse interactions. Conversation-I was initiated with a close-ended question by the teacher. Student-A provided a response in the second turn. Teacher then made an explicit evaluation and reckoned on another plausible response seen in third turn. Student-B mentioned atoms as the basic components of the matters. Immediately, the teacher made the second evaluation and further scientific explanation by considering canonical knowledge of science. Finally, the teacher reinitiates the conversation through posing the same question to Student-C. The structural sequence of Conversation-I was built around IRE-based exchanges.

CONVERSATION BOX. *Two mutually exclusive conversational flow in classroom discourse*

CONVERSATION-I

Turn	Speaker	Utterance	Move	Function
1	Teacher	What are the basic constituents of matters?	Initiate	Nuclear initiation
2	Student-A	Particles.	Response	-
3	Teacher	Particles. Yes. Anything else?	Evaluate>Reinitiate	Evaluation & Bound initiation
4	Student-B	Atoms.	Response	-
5	Teacher	Yes! Atoms are the building blocks of substances. Yes, Student C?	Evaluate>Explanation>Reinitiate	Evaluation & Description & Bound initiation

CONVERSATION-II

Turn	Speaker	Utterance	Move	Function
1	Teacher	What are the basic constituents of matters?	Initiate	Nuclear initiation
2	Student-A	Particles.	Response	-

3	Teacher	What do you mean by particles?	Evaluate>Reinitiate	Evaluation & Request for clarification
4	Student-A	I mean substances consist of particles or are composed of tiny particles	Response	-
5	Teacher	[To whole class by shaking her head in order to certify previously provided response; joint knowledge marker]. Do you agree with her as she mentioned about tiny particles compose of any substance?	Evaluate>Follow-up	Evaluation & Revoicing
6	Student-B	Yes, but atoms are the basic ingredients of matters	Response	-
7	Teacher	Is there a difference between atom and particle? They are same or not?	Evaluate>Follow-up	Evaluation & Request for clarification

Conversation-II has a distinctive discursive orientation compare to Conversation-I. Similar to Conversation-I, the second conversation was initiated with a close-ended question by the teacher. Student-A provided a response in the second turn. In the third turn, the teacher first made an implicit evaluation and a follow-up move as in the form of requesting for clarification (teacher discursive move). In the fourth turn, the student provided a clarification. In the fifth turn, teacher made a particular move by revoicing to make the previous student utterance shared and common. In the sixth turn, Student-B provided a response declaring other aspects of the matters. Once again, the teacher made a tacit evaluation following an in-depth questioning for further response of the Student-B. Similarly, Conversation-II was also built around IRE-based exchanges.

For above-stated samples of discursive interactions, there are two important points. First, they incorporate the same structural sequence (IRE-based exchanges). Secondly, the teacher played out distinctive or alternative discursive moves in the two conversations. This may generate two exclusive pedagogical-discursive conditions: *congruity condition* and *incongruity condition.* As shown, teachers may operate IRE-based exchanges in a dominative way to initiate and maintain classroom discourse. In the absence of contingent and plausible teacher discursive moves, teachers begin to wield knowledge-transmission modes of teaching in which the format and the meaning of classroom discourse are exactly matched. This confirms congruity condition or isomorphism thesis as the formats and the means become the common discursive unit of classroom discourse as *monologue*.

On the other hand, teachers may execute several discursive moves that are attached to students' reasoning by continuously keeping the *necessary* flow of the negotiation (e.g. referring teachers' dynamic *but* pre-determined agenda) in his or her mind in the presence of pervasive IRE-based exchanges. In this case, teachers invite students to contribute classroom discourse through collective efforts of them. Thus, the existence, in turn *so-called regressing discursive influences* of IRE-based exchanges is disappeared. Since, there is a shared and common cognition by means of interthinking among students (Mercer 1995, 2000) instead of running poor triadic dialogues validating knowledge transmission. This therefore verifies incongruity condition in which the formats and the meanings of the classroom discourse cannot be matched. This also signals that the nonisomorphism thesis refers to a type of classroom discourse including both *dialogue* and *monologue*. In sum, two conditions (i.e. congruity and incongruity) or thesis (isomorphism and nonisomorphism) were negotiated by taking related studies into account to reveal out the priority of the discursive purposes of teacher discursive moves compare to less practical debates concerning the exact matching of format and meaning of classroom discourse.

Studies of isomorphism thesis (congruity condition)

Implicit argumentations on isomorphism thesis

Mortimer and Scott (2003) expanded IRE-based exchange into IRFRF ... RF chain where F-move stands for a further teacher discursive move. These enlarged exchanges are thought to allow deepened teacher-student discursive interactions. In this way, students may have more opportunities in contributing to discourse through open-ended chains of exchanges in dialogically-oriented classrooms (Leach and Scott 2002; Scott 1998; Scott, Mortimer and Aguiar 2006). In other words, discursive exchanges are mostly embodied around IRFRF … RF or open-ended chains of patterns in dialogically-oriented classrooms. These patterns can be I-R-P-R-P-R-E (chain of interaction closed by teacher's final evaluation), I-R-P-R-P-R- (chain of interaction remains open without a final evaluation), I-Rs1-Rs2-Rs3- (an example of a student-based sequence that starts with a question, or different students answer the same question from the teacher; P: prompt; R: response; Rsn: students' response). Put it differently, it is implicitly assumed that authoritatively-oriented classroom discourse can be understood through solid IRE-based exchanges whereas dialogically-oriented classroom discourse entails larger and open-ended chains of discursive patterns (Scott et al. 2006; van Booven 2015; Wells 1996). To sum, the format and the meaning of classroom discourse are expectedly paired or matched.

Moreover, teacher questions (I-move: Initiation) may be closed with predetermined, short responses that those are pitched at recall; lower order stages in authoritatively-oriented classrooms (e.g., Chin 2006; 2007). Conversely, in dialogically-oriented classrooms, teacher questions may be open, serve to promote learners to undertake more cognitive responsibility for thinking about subject; in turn, student responses become more sophisticated and cohesive (Chin 2006; Mortimer 1998; Mortimer and Scott 2000; Mortimer and Scott 2003; van Zee and Minstrell 1997a, 1997b). In this sense, the dichotomy between dialogically- and authoritatively-oriented classrooms is supposed due to the extensive uses of IRE-based exchanges. Furthermore, teacher responses (E-move: Evaluation) are also different in authoritatively-oriented classrooms where teacher praises correct student responses. Teachers may immediately take corrective actions to remediate wrong student responses. Teachers may also treat students' challenges to their questions (ideas, positions) as possible threats (Zohar 2004; Zohar and Schwartzer 2005). Nevertheless, in dialogically-oriented classrooms, teachers may delay judgments to adjust a comfortable wait time for student-led utterances. They may accept and acknowledge the students' contributions to the classroom talk in a neutral rather than evaluative manner (Chin 2006, 2007; Hogan, Nastasi and Presley 2000; Roth 1996; Wells 1986; van Zee 2000). All these are possible when teachers match the format and the meaning of classroom discourse.

Teacher questioning-based studies and isomorphism thesis

The purpose of teacher questioning in discursively exclusive classroom discourses (dialogically-oriented and authoritatively-oriented) is considerably believed as dissimilar (Kawalkar and Vijapurkar 2013). Teachers may perform questioning as a way of being informed about what and to what extent students know and evaluating student-led responses in authoritatively-oriented classrooms (Chin 2006). However, teacher questioning serves to diagnostic purposes and aiming at prolonging learner's reciprocality in responding to either teachers or other learners' utterances in dialogically-oriented classrooms (Baird and Northfield 1992; Orsolini and Pontecorvo 1992).

In this manner, Erdogan and Campbell (2008) explored teacher questions, question types and exchange patterns that whether these components coincide with high and low levels of dialogically-oriented teaching practices. The teachers of high levels of dialogically-oriented teaching was able to create more open-ended chains of discursive exchanges through posing more open-ended, thinking triggering questions compare to the teachers of low levels of dialogically-oriented teaching. Teachers of low levels of dialogically-oriented teaching needed more IRE-based exchanges by means of close-ended discursive exchanges.

In a similar vein, Kawalkar and Vijapurkar (2013) inquired into the types of teacher questions. The authors found six functions of teacher questions that are displayed in dialogically-oriented classrooms. These are exploring pre-requisites/setting the stage, generating ideas and explanations, probing further, refining conceptions and explanations, guiding the entire class towards the scientific concepts, classroom management. The six functions of teacher questions were found to be associated to IRF…RF; I-R-P-R-P-R-E; I-R-P-R-P-R- or I-Rs1-Rs2-Rs3- as open formations of discursive exchanges. This indicates a correspondence between the format and the meaning of classroom discourse. In other respects, Kawalkar and Vijapulkar (2013) identified three purposes of teacher questions in authoritatively-oriented classrooms. These are exploring prerequisites (I-move: Initiate), giving concrete and undisputable explanations (E-move, solid evaluation), revising the explanations of students to legitimize the evaluation criteria (E-move, correction plus solid evaluation). Accordingly, these three purposes of teacher questions actually characterize the correspondence between the format and the meaning of classroom discourse.

Process-by-product studies and isomorphism thesis

Martin and Hand (2009) and McNeill and Pimentel (2010) explored teacher questioning within dialogically-oriented classrooms. Main causal statement of these two studies was that when teacher posed more questions that are open-ended instead of recall and rhetorical ones, students would have more chances to manifest their voices in contributing classroom discourse. Martin and Hand (2008) considered the initial analysis of total numbers of types of teacher-led questions. They coded and counted the total numbers of factual or recall type questions that were addressed through IRE-based exchanges. They also identified the total numbers of open-ended questions aiming at eliciting student-led voices that were captured by means of open-ended chains of exchanges. Similarly, McNeill and Pimentel (2010) varied teacher-led questions or questioning as open-ended, close-ended, rhetorical and managerial.

The two studies analysed percentage of class time devoted to teacher voice versus student voice. McNeill and Pimentel (2010) also considered occurrences of dialogical interactions (i.e., independent, connected, dismissal and acknowledgement). Moreover, Martin and Hand (2008) put criteria as non-argument and true argument, and existence of claims and evidences in analysing students' products of argument structure. McNeill and Pimentel (2010) adopted same approach. They considered claim, evidence, reasoning and question as the indicators of the better argument structures.

The two studies commonly confirmed the fact that teacher questioning with enlarged and open-ended chains of discursive exchanges brought along more student voice and better student-led argument structures. In these two studies, students possessed more places in lending classroom exchanges while teachers tolerated student-led discursive contributions in the presence of diverse open-ended formats of IRE-based exchanges. This common findings of the two above-stated studies were also confirmed by other studies (Louca, Zacharia and Tzialli 2012; Mortimer and Scott 2003; van Zee and Minstrell 1997a, 1997b).

Studies of nonisomorphism thesis (incongruity condition)

Until here, presented studies above advocated that there should be an isomorphism between the formats and the meanings of classroom discourse. For isomorphism thesis, a clear congruity between the formats and meanings of classroom discourse is approved and acknowledged. In this section, an array of counter-arguments has taken place to confirm the privileges of teacher discursive moves regardless the moves are played out through rigorous IRE-based frames or other more open-ended and enlarged formats of exchange. First counter-argument comes from Lefstein, Snell and Israeli (2015). They argued that:

> "The ratio of open to closed questions is only relevant to the final dimension: closed questions are assumed to be suggestive of an authoritarian epistemological stance and vice versa, but this assumption is also problematic: the educative qualities of

dialogic interaction do not derive in and of themselves from teacher questions, but rather from the subsequent student participation and teacher follow-up that are assumed to be stimulated by such questions." (p. 8)

The argument of Lefstein et al. (2015) emphasises that pervasive numbers of close-ended questioning by means of rigorous placement of IRE-based exchanges does not necessarily indicate an authoritatively-oriented classroom discourse. In other words, presumable negative consequences of intensive usages of IRE-based exchanges may not stem from the format of the classroom discourse. Pedagogical insights of teacher discursive moves that create the meaning of classroom discourse transcend the influences of the formats of classroom discourse whether the formats are played out in a fixed and/or enlarged style (Edwards and Mercer 1987; Lemke 1990).

Beyond, teachers may intentionally and intensively play out IRE-based exchanges in classroom discourse by virtue of close-ended questions or soft evaluations. It does not mean that teacher takes an authoritatively-oriented pedagogical stance, however. Similarly, teacher may also operate open and larger chains of discursive exchanges through for instance open-ended questioning. However, it does not ensure that the teacher adopts a dialogically-oriented classroom discourse (Cullen 2002; Nassaji and Wells 2000; Myhill and Dunkin 2005). Since, co-construction of knowledge requires attached, contingent and internally consistent discursive exchanges between students and teacher (Lefstein et al. 2015). As a whole, the issue is seemed to be related to the meanings of classroom discourse, not to the formats of classroom discourse as negotiated in the rest of this section.

Contingent teacher discursive moves and nonisomorphism thesis

Boyd and Rubin (2006) examined the types of teacher questions (the formats of classroom discourse) or flow of teacher questioning (the meanings of classroom discourse) in order to deduce the primary function of the teacher discursive moves in starting and maintaining an authentic classroom discourse. Boyd and Rubin (2006) counted teachers' open-ended and close-ended questions and their contingency conditions to the students' previous utterances. Their fine-grained conversation analysis evidently verified the fact that the distinguishing characteristic of teacher questions that elicited student discourse was found to be their contingency on previous student-led utterances rather than whether they were characterized as open-ended or seeking-for-information (close-ended) questions. Put it differently, even though the teachers posed more open-ended or eliciting questions, due to their non-contingency to students' previous utterances, they did not function to extend the students' contributions. In contrast, although the teacher posed less open-ended and eliciting questions, in the presence of contingency questioning that were attached with students' previous utterances, classroom talk was mostly contributed by students-led utterances. To sum, in Boyd and Robin's (2009) study formats of the classroom discourse were same regardless of the way of the teacher questions and teacher questioning. In other words, the formats and the meanings of classroom discourse were not paired and were isolated due to particular meanings of teacher questioning as to be or not to be contingent and internally consistent.

Molinari, Mameli and Gnisci (2013) confirmed another aspect of incongruity condition. Molinari et al. (2013) evidently revealed that contingent and coherent flows of pervasive IRE-based exchanges may be more proper indicators of a fruitful classroom discourse. Molinari et al. (2013) conducted a lag sequential analysis and validated that there may not be an isomorphism between the formats and the meanings of the classroom discourse:

"Our study describes the different forms and meanings conveyed by the same discourse structure, based on the IRF pattern. Moving beyond the idea of the isomorphism between IRF and a monologic orientation, we have shown through the application of sequential analyses that the same discourse structure in meaningfully chained triadic patterns can indeed foster radically different orientations. In some cases, teachers revealed an open orientation, allowing children the space and time for

> a free contribution and encouraging them to assume the role of primary knower; in others, they achieved didactical aims sustaining and stimulating the pupils' deduction and reasoning skills; in others again, they adhered to a linear and direct pattern of knowledge transmission; and, finally, in some occasions teachers sustained and helped children with special needs." (p. 426)

There are two featured lines of vision in the argument of Molinari et al. (2013). First, they deduced an incongruity condition explicitly. Their in-depth lag sequential analysis verified the fact that the meanings and the formats of classroom discourse cannot be easily paired as discursive interactions might be substantially rather complicated and sophisticated than we suppose. The sophistication denotes that there may be particular classroom discourse moments in which teacher may match the meaning and the format of the classroom discourse and *vice versa* is also valid and functional for the sake of the classroom discourse. To illuminate, there may be structural and emergent events (qualities) during classroom discourse (Alexander 2001, 2006; Candela 2005; Hardman 2011). The structural events are prescriptive ones (didactical) that harmonise with teacher's pre-agenda. To our knowledge, classroom discourse is an organic and dynamic entity, however. Thus, classroom discourse inherently incorporates the emergent events (co-constructive) that may not be anticipated and embedded in teacher's pre-agenda. Consequently, once the structural events are performed in particular moments of classroom discourse, members of class (students and teacher) can match the formats and the meanings of classroom discourse. On the other hand, in the case of emergent classroom events, there is no room to pair the formats and the meanings of classroom discourse. This dialectical and obligatory interaction was also supported by several studies (Cullen 2002; Haneda and Wells 2008; Nassaji and Wells 2000; Myhill and Dunkin 2005; Wells 2007).

The balance between teacher and student exchanges

IRE-based exchanges are mostly matched with display questions of teacher who already knows predetermined answers (Cazden 2001). In a typical manner, a teacher may frame his or her agenda incorporating a set of normative discursive interactions by means of close-ended IRE-based exchanges during classroom discourse (van Zee and Minstrell, 1997a). Accordingly, teachers as epistemic authorities may have dominative power in governing what will be taught to students. The epistemic authorities of classrooms are also the social authorities as they designate the organisational flow of the classroom discourse (Candela 2005; Mameli and Molinari 2013). In this sense, Orsolini and Pontecorvo (1992) asserted that teachers who actuate IRE-based exchanges in an intensive manner often underestimate and exclude student-led contributions.

Abovementioned arguments may not be valid for classroom discourse that is played out in *true* or *authentic* dialogically-oriented classrooms, however. A true dialogically-oriented classroom discourse context refers that both student-led contributions and canonical knowledge and practices of science should be considered worthwhile and acknowledged in decontextualizing (considering learners' thinking and talking) and recontextualizing (considering scientists'/experts' thinking and talking) the co-construction of common and shared knowledge (Crawford 2000, National Research Council [NRC] 1996). But, this may be pretty drastic discursive responsibility for teachers. On one hand, teachers must permit student-led contributions even though they are not scientific, rational and may be naïve and decontextualized. On the other hand, teachers must also prompt student for appropriating and applying canonical knowledge of science and epistemic practices (Candela 2005; Mameli and Molinari 2013). In the former case, it would not be plausible and possible to extensively display solid IRE-based exchanges with conventional discursive *meanings*. Since, a teacher clarifies, elaborates and makes the student-led contributions common prior to promote them for recognising and re-contextualizing an alternative thinking and talking system as scientist have operated in their communities. In the latter case, the formats and the meanings of classroom discourse should be matched. Put it differently, in the latter case, correspondence between the formats and the meanings of classroom discourse would be inherently occurred, since, teacher directs students to canonical practices and knowledge of

science after welcoming student-led contributions. This dialectical and *sine qua non* discursive duality was also revealed by Molinari *et al.* (2013):

> "Co-constructive sequences, characterized by requests of clarification, use of examples, and solicitation of reformulations or reflections, are a different way, as compared to dialogic sequences, to foster dialogue and participation in class: while dialogic sequences unfold in a free and open interaction, co-constructive ones are more structured and controlled by the teacher who, nevertheless, does not 'abuse' her role as primary knower and makes the effort to guide the children's development of deduction skills, reasoning, and thinking. These sequences are, therefore, fruitful occasions for constructing knowledge and encouraging the children's active participation in the discourse." (p. 425)

To sum up, during classroom discourse there are particular moments in which the format and the meaning of classroom discourse are matched or there may be a disparity between the format and the meaning. There is a clear implication that the required dialectical duality stems from teachers who are enable executing both a conventional and co-constructivist instructional style during classroom discourse by taking into both student-led contributions and classroom discourse's ultimate objective into consideration. In this context, there are two illustrative concepts illuminating the imperative synergy of congruity and incongruity of the meanings and the formats of classroom discourse. These are Learning Demand and Productive Disciplinary Engagement.

Learning demand concept and nonisomorphism thesis

The concept of learning demand was first operationally defined by Leach and Scott (2002) to offer a way of appraising the differences between *social languages of school science* and *social languages that students bring to classroom*. Originally, Vygotsky (1987) defined two distinctive thematic concepts of learners: *spontaneous concepts* involving learners' reasoning mostly without conscious and *scientific concepts* as scientists' process views. Vygotsky (1978) claimed that "spontaneous concepts are developed through everyday experience and communication and are formed aside from any process aimed specifically at mastering them" (Scott 1997, p. 16). However, scientific concepts of learners are enhanced by means of true instruction as "the birth of the scientific concept begins not with an immediate encounter with things but with a mediated relationship to the object" (Vygotsky 1987, p. 219). In this context, within a classroom discourse, there may be three social languages: everyday social languages of learners, social languages of scientists, social languages of school science (Leach and Scott 2002). Everyday social languages of learners are described as their spontaneous concepts. These are used by learners to explain the events that occur around them.

For instance, as mentioned in above-stated sections, learners may presume that "plants feed from soil". A statement like "plants feed from soil" may be considered as a misconception or alternative conception of a learner. In this sense, alternative conceptions can be seen equal to spontaneous conceptions as the basis of everyday social languages of the learners. However, in Vygotskian sense, alternative is not exactly matched with spontaneous. To illustrate, scientists have their specific ways of thinking and talking styles for their specific purposes in generating scientific knowledge. Scientists' different ways of thinking and talking systems are alternative to learners' everyday thinking and talking systems (Leach and Scott 2002; Vygotsky 1987). It also means that learners have their own everyday social languages or thinking and talking styles in explaining the events occurred around them. The everyday social languages of learners are also alternative to scientists' social languages. As a result, social languages of scientists and everyday social languages of learners are distinctive from each other.

In any content (e.g. science, mathematics, literature), the quantity of learning demand may vary, and this can be completely modified the stream (e.g. formats and meanings) of classroom discourse (Leach and Scott 2002). For example, students may conceive that "forces have impacts

on objects as either pulling or pushing" However, there may be cases where a certain amount of force is not able to push or pull a heavier or fixed object due to friction force. In this case, specified learning demand is conceptually higher, since; there is a confliction with students' prior reasoning pertaining to the impacts of forces on motions. Once learning demand is specified higher, correspondence between the formats and the meanings of classroom discourse are broken down. In other words, the formats of classroom discourse can be fragmented by IRE-based exchanges, but the meaning is another issue. Since, teachers should exhibit more dialogically-oriented discursive moves such as using reflective questioning as a reflective toss (e.g., van Zee and Minstrell 1997b), giving students the opportunity to express their ideas in order to discern their understanding (e.g., Crawford, 2000) or posing a question that stimulates student thinking instead of giving direct corrective feedback (e.g., Chin 2006, 2007). Consequently, it is not discursively plausible to match the format and the meaning of classroom discourse in course of higher learning demand.

On the other hand, when students try to understand for instance parts of human skeleton, teacher may directly tell about the types of bones to students as a way in which learning demand is lowered compare to former case (Mortimer and Scott 2003). In this case, learning demand is lowered on the part of students. Teacher may exhibit more monologic discursive moves, since; there are no greater pedagogical needs to negotiate due to fixed content. As a consequence, it is pedagogically and discursively plausible to pair the format and the meaning of classroom discourse in the presence of lower learning demand.

Productive Disciplinary Engagement concept and nonisomorphism thesis

Productive Disciplinary Engagement incorporates four principles for productive and intellectual student engagement in classroom discourses (Engle and Conant 2002). These are problematizing content, giving students authority, holding students accountable to others and to disciplinary norms, providing relevant resources. Details of the principles are displayed in Figure 2.

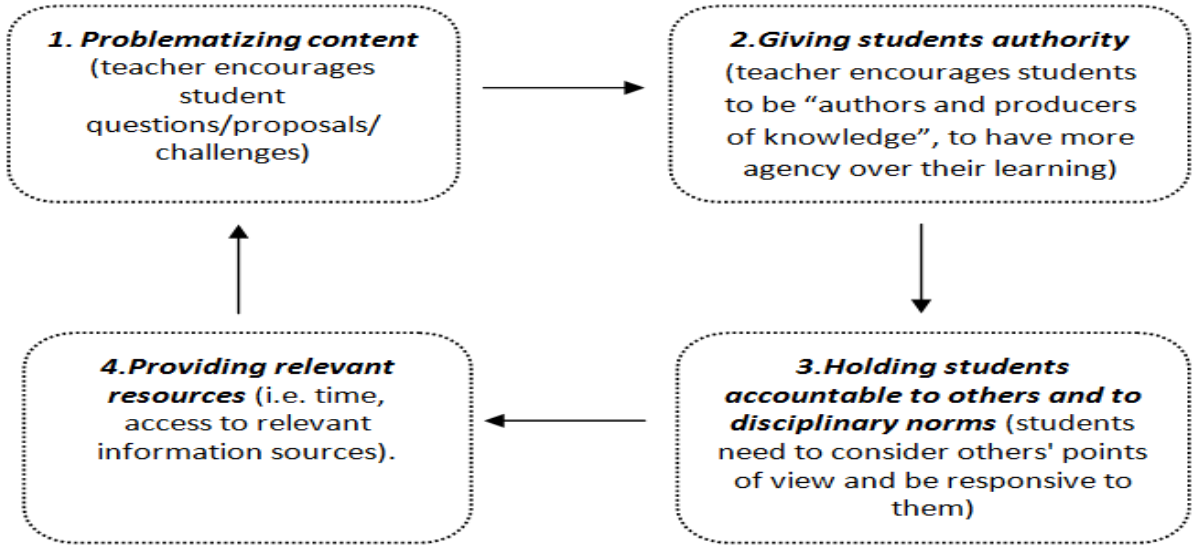

FIGURE 2. *The executive principles of the productive disciplinary engagement*

Problematizing content stands for "teachers should encourage students' questions, proposals, challenges, and other intellectual contributions, rather than expecting that they should simply assimilate facts, procedures and other answers." (Engle and Conant 2002, p. 404). In problematizing content, teachers explore and negotiate student ideas through several discursive moves. Teacher discursive moves may be pooling students' conceptual and procedural ideas (McMahon, 2012), engaging students in clarifying (van Zee and Minstrell 1997a) and enlarging (Chin 2006, 2007) their statements, throwing the responsibility of thinking and learning back to

students (Crawford 2000; van Zee and Minstrell 1997b), acting as challenger, discussant and negotiator (McMahon 2012; Simon, Erduran and Osborne, 2006), or encouraging and prompting students for justified and evidence-based reasoning (Christodoulou and Osborne 2014; Jadallah et al. 2011). As a whole, problematizing content may not be possible through exploiting IRE-based exchanges excessively. Since, in problematizing content, students have to speak up their everyday social languages. In this manner, the formats and the meanings of classroom discourse are not paired.

Giving students authority refers to students have a participatory role for resolving negotiated problems (i.e. research questions for their inquiry) during classroom discourse (Engle and Conant 2002, Lampert 1990a, 1990b). In a gradual sense, teachers may hand-over the responsibility of learning to students: "students may also be positioned as potential *contributors* who may change the shape of collaborative projects (Schwartz, 1999) and even develop into classroom *experts* to whom others may turn" (Engle and Conant 2002, p. 404; original emphasize). In this regard, teachers may carry out close-ended IRE-based and open-ended chains of exchanges in classroom discourse. Teachers' purpose is therefore to work on student-led ideas (Mortimer and Scott 2003) if needed through confirmatory and evaluative IRE-based exchanges. Thus, teachers may use diverse discursive moves: offering cued elicitations (Edwards and Mercer 1997; Lemke 1990), modelling and rehearsing aspects of processes of science (McMahon 2012), focusing students' attention on focal aspects of the activity (Oh 2010). In conclusion, giving student authority requires both congruity and incongruity conditions as the formats and meanings of classroom discourse may be matched and unpaired.

Holding students accountable to others and to disciplinary norms means "the teacher and other members of the learning community foster students' responsibility for ensuring that their intellectual work is responsive to content and practices established by intellectual stakeholders inside and outside their immediate learning environment (Resnick & Hall, 2001) as well as to relevant disciplinary norms, to the extent that these can be embodied in a classroom (Cobb et al. 1997)." (Engle and Conant 2002, p. 405). In this part of classroom discourse, it is accepted that students previously negotiated the content and submitted their ideas through firstly putting forward their everyday social languages. They *then* move on the worlds of scientific thinking and talking. Herein teachers aim at reviewing or wrapping-up previously created discourse (Mortimer and Scott 2003) by means of affirmatory IRE-based exchanges. Teachers may also execute more traditional discursive roles through evaluative IRE-based exchanges. For instance, teachers may give information through lecturing (Edwards and Mercer 1987), offer logical expositions (Lemke 1990), narratives (Scott 1998), or make assessments of students' responses considering canonical knowledge of science by using comprehension checks (Oliveira 2010). As a whole, holding students accountable to others and to disciplinary norms requires congruity condition as the formats and meanings of classroom discourse may be totally matched.

CONCLUSIONS

A critical review of several studies as a whole points a number of salient facts about classroom discourse. Pervasive existence of IRE-based exchanges may not be troublesome with regards to classroom discourse. The significant point may be the conditions in which teachers put to use IRE-based exchanges. Put it differently, pedagogically defective aspects of pervasive existence IRE-based exchanges should not be attributed to formats of classroom discourse. Teacher discursive moves attach premier importance in identifying the diverse uses (dialogically-oriented, authoritatively-oriented) of IRE-based exchanges.

In dialogically- and authoritatively-oriented classrooms, IRE-based exchanges may be same in terms of structural forms. However, same exchanges serve divergent pedagogical, in turn; discursive purposes in dialogically- and authoritatively-oriented classrooms. In other words, there may not be a complete correspondence regarding the meanings of classroom discourse. In other words, a teacher may consciously or unconsciously put IRE-based exchanges into practice in a pervasive sense during classroom discourse. It does not simply mean that this teacher adopts a knowledge-transmission mode of teaching.

There are four crucial points when making sense of congruity and incongruity conditions of classroom discourse. These are the contingency of discursive exchanges, the balance for discursive exchanges, the amount of learning demand, and productive disciplinary engagement. Four crucial aspects of classroom discourse are intimately interrelated.

Creation of fruitful classroom discourse requires contingency of discursive exchanges. The contingency implies that teacher intentionally accommodates his or her talk to students' talk. Contingency of discursive exchanges may be sustained through pervasive or open-ended chains of IRE-based exchanges. But, the formats of classroom discourse may not be a reliable indicator of quality of discursive interactions and do not ensure the existence of the student-led intellectual outcomes. The contingency is a more valid and reliable reference point in estimating the quality of classroom discourse in terms of authentic student-led cognitive contributions.

In addition, a *true* dialogically-oriented (dialectically-oriented) classroom must consist of both dialogic and monologic discursive moments. At first, teachers allow students to speak up their subjective opinions in true dialogically-oriented classrooms. Nevertheless, teachers should not underestimate the core aspects of topic under discussion (Candela 2005; Engle and Conant 2002; Leach and Scott 2002; Mameli and Molinari 2013; Scott et al. 2006). When this the case, teachers must be able to grasp a perfect classroom discourse flow from learners' everyday knowledge and spontaneous reasoning (Vygotsky 1978, 1981) to the canonical aspects of science and scientific reasoning (Leach and Scott 2002; Mameli and Molinari 2013; Scott et al. 2006). This type of transitional flow can also be explained by Bakhtin's (1934) notion of stages of appropriation.

In true dialogically-oriented classroom it "is the way in which the students moved from an initial position of knowing very little about the scientific subject matter, to a final state of understanding it quite well." (Mortimer and Scott 2003, p. 113). Bakhtin (1934) explicated this transition as the stages of appropriation that certainly inform this study's arguments. In Stage-1 of appropriation, students consider new ideas (social languages of scientist) as belonging to others (e.g. teachers, experts, scientists). In this sense, teacher discursive moves should aim at opening up problems, extracting student-led views, and staging or introducing the scientific story. In Stage-1 appropriation, it seems impossible to pair the formats and the meanings of classroom discourse. In Stage-2 appropriation, students conceive new ideas as half their own and half belonging to others. In this manner, teacher's discursive moves service to promote students to work with proposed new ideas and scaffold internalisation (Mortimer and Scott 2003, p. 115). Expectedly, in Stage-2 appropriation the formats and the meanings of classroom discourse can be matched, but within bounds. Finally, during Stage-3 of appropriation, students perceive new ideas as completely their own. Now teacher guides students to operate the scientific view and purposes handing over the responsibility for its use. Presumably, the formats and the meanings of classroom discourse can be totally matched in Stage-3 of appropriation. Moreover, Engle and Conant's (2002) productive disciplinary engagement is also substantially matched with Bakhtin's (1934) notion of stages of appropriation in shedding light on the arguments of this study.

Finally, the concept of learning demand has explanatory power in terms of illustrating the asserted theses or conditions of the current study. The subject matter under consideration may greatly influence the correspondence between the format and the meaning of classroom discourse. When there are bigger gaps regarding conceptual, epistemological and ontological aspects of social languages of science and students' everyday social languages, a matching between the formats and the meanings of classroom discourse seem impossible and implausible. In terms of classroom discourse, great amount of learning demand stands for in-depth social negotiations of meaning requiring intellectually and comfortably free teacher-student discursive interactions. In this manner, even though discursive flow can be fragmented by IRE-based exchanges, the meaning of classroom discourse indicates the student-led decontextualisation of the phenomenon under negotiation for a further recontextualisation. In the case of quite lower learning demand, teachers directly transfer subject matter in the absence of social negotiations of meaning. In this context, there may be a complete correspondence between the formats and the meanings of classroom discourse.

REFERENCES

Aguiar, O. G., Mortimer, E. F., & Scott, P. (2010). Learning from and responding to students' questions: The authoritative and dialogic tension. *Journal of Research in Science Teaching*, *47*(2), 174-193.

Alexander, R. J. (2001). *Culture and pedagogy: International comparisons in primary education*. Oxford: Blackwell.

Alexander, R. J. (2006). *Towards dialogic teaching: Rethinking classroom talk*. New York, NY: Dialogos.

Baird, J. R., & Northfield, J. R. (1992). *Learning from the PEEL experience*. Melbourne, Australia: Monash University Printing.

Bakhtin, M. M (1934). *Discourse in the Novel. The Dialogic Imagination: Four Essays*. Trans. Michael Holquist and Caryl Emerson. Austin: University of Texas.

Berland, K., & Hammer, D. (2012). Framing for Scientific Argumentation. *Journal of Research in Science Teaching. 49*(1), 68-94.

Berry, M. (1981). *Systemic linguistics and discourse analysis: A multi-layered approach to exchange structure*. In Studies in Discourse Analysis (ed. M. Coulthard and M. Montgomery, pp. 120-145. London: Routledge and Kegan Paul.)

Booven, V. D. (2015). Revisiting the Authoritative–Dialogic Tension in Inquiry-Based Elementary Science Teacher Questioning. *International Journal of Science Education, 37*(8), 1182-1201.

Boyd, M., & Rubin, D. (2006). How contingent questioning promotes extended student talk: a function of display questions. *Journal of Literacy Research, 38*(2), 141-169.

Burns, C., & Myhill, D. (2004). Interactive or inactive? A consideration of the nature of interaction in whole class teaching. *Cambridge Journal of Education 34*, 35-49.

Candela, A. (2005). Students' participation as co-authoring of school institutional practices. *Culture & Psychology*, *11*, 321-337.

Cazden, C.B. (2001). *Classroom discourse*. *The language of teaching and learning* (2nd ed.). Portsmouth, NH: Heinemann.

Chapin, S. H., O'Connor, C., & Anderson, N. C. (2003). *Classroom discussions: Using math talk to help students learn.* Sausalito, CA: Math Solutions Publications.

Chin, C. (2006). Classroom interaction in science: Teacher questioning and feedback to students' responses. *International Journal of Science Education, 28*, 1315-1346.

Chin, C. (2007). Teacher questioning in science classrooms: Approaches that stimulate productive thinking. *Journal of Research in Science Teaching, 44*(6), 815-843.

Christodoulou, A., & Osborne, J. (2014). The science classroom as a site of epistemic talk: A case study of a teacher's attempts to teach science based on argument. *Journal of Research in Science Teaching, 51*(10), 1275-1300.

Cobb, P., Gravemeijer, K., Yackel, E., McClain, K., & Whitenack, J. (1997). Mathematizing and symbolizing: The emergence of chains of signification in one first-grade classroom. In D. Kirschner & J. A. Whitson (Eds.), *Situated cognition: Social, semiotic and psychological perspectives* (pp. 151–233). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Crawford, B.A. (2000). Embracing the essence of inquiry: New roles for science teachers. *Journal of Research in Science Teaching, 37*, 916-937.

Cullen, R. (2002). Supportive teacher talk: the importance of the F-move. *In ELT Journal, 56,* 117-127.

Duschl, R.A., & Gitomer, D. H. (1997). Strategies and challenges to changing the focus of assessment and instruction in science classrooms. *Educational Assessment, 4*(1), 37-73.

Edwards, D., & Mercer, N. (1987). *Common knowledge: The development of understanding in the classroom*. London: Methuen.

Engle, R. A., & Conant, F. R. (2002). Guiding principles for fostering productive disciplinary engagement: Explaining an emergent argument in a community of learners classroom. *Cognition and Instruction, 20*, 399-484.

Erdogan, I, & Campbell, T. (2008) Teacher Questioning and Interaction Patterns in Classrooms Facilitated with Differing Levels of Constructivist Teaching Practices. *International Journal of Science Education, 30*(14), 1891-1914.

Haneda, M., & Wells, G. (2008). Learning an additional language through dialogic inquiry. *Language and Education, 22*,114-36.

Hardman, F. (2011). Promoting a dialogic pedagogy in English teaching. *In Debates in English teaching*, ed. J. Davison, C. Daly, &, J. Moss, pp. 36-47. London: Routledge.

Hogan, K., Nastasi, B.K., & Pressley, M. (2000). Discourse patterns and collaborative scientific reasoning in peer and teacher-guided discussions. *Cognition and Instruction, 17*(4), 379-432.

Jadallah, M., Anderson, R. C., Nguyen-Jahiel, K., Miller, B. W., Kim, I., Kuo, L., Dong, T. & Wu, X. (2011).

Influence of a teacher's scaffolding moves during child-led small-group discussions. *American Educational Research Journal, 48*(1), 194-230.
Kawalkar, A., & Vijapurkar, J. (2013). Scaffolding Science Talk: The role of teachers' questions in the inquiry classroom. *International Journal of Science Education, 35*(12), 2004-2027.
Lampert, M. (1990a). Connecting inventions with conventions. In L. P. Steffe & T. Wood (Eds.), *Transforming children's mathematics education* (pp. 253–265). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
Lampert, M. (1990b). When the problem is not the question and the solution is not the answer: Mathematical knowing and teaching. *American Educational Research Journal, 27*(1), 29-63.
Leach, J. T., & Scott, P. H. (2002). Designing and evaluating science teaching sequences: An approach drawing upon the concept of learning demand and a social constructivist perspective on learning. *Studies in Science Education, 38*, 115-142.
Lefstein, A. (2008). Changing classroom practice through the English National Literacy Strategy: A micro-interactional perspective. *American Educational Research Journal*, 45, 701-737.
Lefstein, A., Snell, J. & Israeli, M. (2015). From moves to sequences: expanding the unit of analysis in the study of classroom discourse. *British Educational Research Journal, 41*(5), 866-885.
Lemke, J. L. (1990). *Talking science: Language, learning and values*. Norwood, NJ: Ablex.
Lin, A. M. Y. (2007). What's the use of "triadic dialogue"? Activity theory, conversation analysis and analysis of pedagogical practices. *Pedagogies*, *2*(2), 77-94.
Louca, L. T., Zacharia, Z. C., & Tzialli, D. (2012) Identification, Interpretation-Evaluation, Response: An alternative framework for analyzing teacher discourse in science. *International Journal of Science Education, 34*(12), 1823-1856.
Lyle, S. (2008). Dialogic teaching: Discussing theoretical contexts and reviewing evidence from classroom practice. Language and Education: *An International Journal, 22*, 222-240.
Mameli, C., & Molinari, L. (2013) Interactive micro-processes in classroom discourse: turning points and emergent meanings. *Research Papers in Education, 28*(2), 196-211.
Martin, A. M., & Hand, B. (2009). Factors affecting the implementation of argument in the elementary science classroom. A longitudinal case study. *Research in Science Education, 39*, 17-38.
McMahon, K. (2012) Case Studies of Interactive Whole-Class Teaching in Primary Science: Communicative approach and pedagogic purposes, *International Journal of Science Education, 34*(11), 1687-1708.
McNeill, K. L., & Pimentel, D. S. (2010). Scientific Discourse in Three Urban Classrooms: The Role of the Teacher in Engaging High School Students in Argumentation. *Science Education, 94*, 203-229.
Mehan, H. (1979). *Learning lessons: Social organization in the classroom*. Cambridge, MA: Harvard University Press.
Mercer, N. (1995). *The guided construction of knowledge*. Clevedon: Multilingual Matters.
Mercer, N. (2000) *Words and Minds: how we use language to think together*. London: Routledge.
Mercer, N. & Dawes, L. (2014). The study of talk between teachers and students, from the 1970s until the 2010s. *Oxford Review of Education*, *40*(4), 430-445.
Myhill, D. (2006). Talk, talk, talk: Teaching and learning in whole class discourse. *Research Papers in Education*, *21*(1), 19-41.
Myhill, D., & Dunkin, F. (2005). Questioning learning. *Language and Education 19*(5), 415-427.
Mortimer, E.F. (1998). Multivoicedness and univocality in classroom discourse: An example from theory of matter. *International Journal of Science Education, 20*, 67-82.
Mortimer, E. F., & Scott, P. H. (2000). *Analysing discourse in the science classroom*. In J. Leach, R. Millar, & J. Osborne (Eds). Improving science education: The contribution of research. Milton Keynes, UK: Open University Press.
Mortimer, E., & Scott, P. (2003). *Meaning making in secondary science classrooms.* Maidenhead, England: Open University Press.
Molinari, L., Mameli, C., & A., Gnisci. (2013). A sequential analysis of classroom discourse in Italian primary schools: The many faces of the IRF pattern. *British Journal of Educational Psychology, 83*, 414-430.
Nassaji, H., & Wells, G. (2000). What's the use of triadic dialogue? An investigation of teacher student interaction. *Applied Linguistics, 21*,376-406.
National Research Council. (1996). *National science education standards*. Washington, DC: National Academy Press.
Oh, P. S. (2010). How can teachers help students formulate scientific hypotheses? Some Strategies found in abductive inquiry activities of earth science. *International Journal of Science Education, 32*(4), 541-560.
Oliveira, A. W. (2010). Improving teacher questioning in science inquiry discussions through professional

development. *Journal of Research in Science Teaching, 47*(4), 422-453.
Orsolini, M., & Pontecorvo, C. (1992). Children's talk in classroom discussions. *Cognition and Instruction, 9*(2), 113-136.
Resnick, L. B., & Hall, M. W. (2001). *The principles of learning: Study tools for educators* (version 2.0) [CD–ROM]. Pittsburgh, PA: Institute for Learning, LRDC, University of Pittsburgh.
Roth, W. M. (1996). Teacher questioning in an open-inquiry learning environment: Interactions of context, content, and student responses. *Journal of Research in Science Teaching, 33*(7), 709-736.
Schwartz, D. L. (1999). The productive agency that drives collaborative learning. In P. Dillenbourg (Ed.), *Collaborative learning: Cognitive and computational approaches* (pp. 197-218). Amsterdam: Pergamon.
Scott, P. H. (1997). Teaching and learning science concepts in classroom: talking a path from spontaneous to scientific knowledge. In: *Linguagem, cultura e cognicao reflexoes para o ensino de ciencias.* Belo Horizonte, Brazil: Faculdade de Educacao da UFMG.
Scott, P. H. (1998). Teacher talk and meaning making in science classrooms: A Vygotskian analysis and review. *Studies in Science Education, 32,* 45-80.
Scott, P.H., Mortimer, E.F., & Aguiar, O.G. (2006). The tension between authoritative and dialogic discourse: A fundamental characteristic of meaning making interactions in high school science lessons. *Science Education, 90*(7), 605-631.
Simon, S., Erduran, S., & Osborne, J. (2006). Learning to teach argumentation: Research and development in the science classroom. *International Journal of Science Education, 27*, 137-162.
Sinclair, J. McH., & Coulthard, R.M. (1975). *Towards an analysis of discourse: The English used by teachers and pupils*. London: Oxford University Press.
Sunderland, J. (1996). Gendered discourse in the foreign language classroom: Teacher-student and student-teacher talk, and the social construction of children's femininities and masculinities (PhD dissertation, Lancaster University, UK).
Sunderland, J. (2000). New understandings of gender and language classroom research: Texts, teacher talk and student talk. *Language Teaching Research, 4*(2), 149-173.
Wells, G. (1986). *The meaning makers: Children learning language and using language to learn*. Portsmouth, NH, Heinemann.
Wells, G. (1996). Using the tool-kit of discourse in the activity of learning and teaching. *Mind, Culture, and Activity*, *3*, 74-101.
Wells, G. (2007). Semiotic mediation, dialogue and the construction of knowledge. *Human Development, 50*, 244-74.
van Zee, E.H., & Minstrell, J. (1997a). Reflective discourse: Developing shared understandings in a physics classroom. *International Journal of Science Education, 19*, 209-228.
van Zee, E.H., & Minstrell, J. (1997b). Using questioning to guide student thinking. *The Journal of the Learning Sciences, 6*, 229-271.
van Zee, E.H. (2000). Analysis of a student-generated inquiry discussion. *International Journal of Science Education, 22*(2), 115-142.
van Zee, E.H., Iwasyk, M., Kurose, A., Simpson, D., & Wild, J. (2001). Student and teacher questioning during conversations about science. *Journal of Research in Science Teaching, 38*(2), 159–190.
Vygotsky, L. S. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.
Vygotsky, L. S. (1981). *The genesis of higher mental functions*. In J. W. Wertsch (Ed.), The concept of activity in Soviet psychology (pp. 144-188). Armonk, NY: Sharpe.
Vygotsky, L. S. (1987). Thinking and speech (N. Minick, Trans.). In R. W. Rieber & A. S. Carton (Eds.), *The collected works of L. S. Vygotsky: Vol. 1. Problems of general psychology*, (pp. 39-285). New York: Plenum Press. (Original work published 1934).
Zohar, A. (2004). *Higher order thinking in science classrooms: Students' learning and teacher' professional development*. Dordrecht, The Netherlands: Kluwer.
Zohar, A & Schwartzer, N. (2005) Assessing Teachers' Pedagogical Knowledge in the Context of Teaching Higher-order Thinking. *International Journal of Science Education, 27*(13), 1595-1620.

GENİŞLETİLMİŞ TÜRKÇE ÖZET

Amaç ve Önem: Bu çalışmanın amacı sınıf söylemine yönelik oluşturulmuş temel bir teze karşı bir argüman oluşturmaktır. Sınıf söylemini temelde iki perspektif karakterize eder. Bunlardan birincisi sınıf söyleminin yapısal formatı, diğeri ise bu yapısal formata eşlik eden söylemsel ya da pedagojik anlamdır. Başka bir deyişle, *sınıf söyleminin yapısı* öğretmenin bir soru sorarak müzakereyi başlattığı (Başlat hamlesi: B), öğrenciden gelen bir cevabı (cevap: C) değerlendirdiği (Değerlendir hamlesi: D) üçlü bir diyalogu ifade eder. Bu üçlü diyalog formatı öğretmenin üçüncü hamleyi değiştirmesi ile başkalaşabilir. Örnekse, öğretmenin üçüncü hamlesi bir takip sorusuna ya da bir geri dönüte de dönüşebilir. Böyle olduğunda söylemin formatı BCD-temelli kapalı formatından, BCTsCTsCGdC…CCC gibi açık uçlu bir formata dönüşebilir (B: Başlat; C: Cevapla, Ts: Takip Sorusu; Gd: Geri Dönüt). Bu anlamda, birçok araştırmacı öğretimin pedagojik anlamı ya da sınıf söyleminin pedagojik anlamı ile formatını eşleştirme yoluna gitmişlerdir. Açıklamak gerekirse, eğer kapalı uçlu, salt BCD-temelli üçlü diyalogların niceliği sınıfta geçen konuşmaları baskılarsa, o sınıfta geleneksel tarzda bir öğretim yapılıyor anlamına gelebilir tezi öne sürülmüştür. Öte yandan, öğrencinin cevabı üzerinden yapılandırılan takip soruları öğretmen tarafından artırıldığında ve öğrenciye açık uçlu diyaloglar aracılığıyla geri dönütler sağlandığında, o sınıfta anlamın yapılandırılmasına yönelik oluşturmacı bir öğretimsel yaklaşımın benimsendiği tezi de ileri sürülmektedir. Başka bir ifade biçimi ile salt BCD üçlüsü kullanıldığında sadece monolojik etkileşimler söz konusu iken, daha açık uçlu etkileşimler ise diyalojik öğretimsel anlamları beraberinde getirir. Bu ise şu anlama gelmektedir: sınıf söyleminin formatı ile sınıf söyleminin pedagojik-öğretimsel anlamı eş-biçimlilik göstermektedir ya da eşleşmektedir. Ancak bu çalışma delil temelli bir biçimde bu tezi yanlışlamayı amaçlamaktadır. Uyumluluk ya da eşleşme tezini yanlışlama noktasında temel alınan eksen, öğretmenin sınıf içinde kullandığı söylemsel hamlelerin özel sergileniş biçimlerinin ilgili eşleşmeyi bozabileceği karşı tezine ulaşılmıştır.

Yöntem: Bu çalışma bir eleştirel sistematik derlemedir. Buradaki amaç ilgili çalışmaların herhangi sistematik bir derlemesinin tarafsız bir sunumu değil, bir pozisyon (argüman) oluşturmaktır. İlgili çalışmalar bilgisayar temelli (ERIC, Boolean aygıtları vb. arama robotları kullanılarak), amaçlı taramalar yapılarak elde edilmiştir. Çalışmaların seçimi ve analizi yöntemsel süreçlerin iki ana aşamasını oluşturmaktadır. Kapsam içinde tutulan çalışmaların seçiminde teorik temelli bir belirleyici çerçeve kullanılmıştır (Aşama-1). Çalışmaların analizi ve yorumlanması için üç-yüzlü bir çerçeve (düşünme aracı) yapılandırılmıştır (Aşama-2). Dahil edilen çalışmalar üçlü bir sınıflamaya konu olmuştur. Birinci kategori eşleşme tezini dolaylı ya da doğrudan kabul eden ve savunan çalışmalar havuzunu oluşturmaktadır. İkinci kategori ise uzlaşma karşıtı tezi savunan çalışmaların yer aldığı havuzdur. Son kategori ise hem uzlaşma hem de karşıt tezi (uyumsuzluk, uzlaşmama) içeren çalışmaların olduğu havuzdur. Bu üçlü nitel sınıflama sistemi göz önünde bulundurularak çalışmalar analiz edilmiş, araştırmacıların veri temelli ya da teorik argümanları sürekli karşılaştırılmış, zıtlaştırılmış ve sentezlenmiştir.

Bulgular: Bu eleştirel derlemeye dâhil edilen tüm araştırmalar incelendiğinde, öğretmenlerin söylemsel hamleleri özellikli sergileme durumlarının sınıf söyleminin formatları ile anlamlarını eşleştirebileceği ya da ayrıştırabileceği sonucuna varılmış ve tek yönlü olan eş-biçimlilik tezi reddedilmiştir ya da bu araştırmanın orijinal argümanı ile genişletilmiştir. Bu eleştirel derlemede öne çıkan, en önemli sonuçlardan bir tanesi, öğretmenin özellikle öğrencilerin verdikleri cevaplar üzerine, sonraki söylemsel hamlesini inşa etme durumunun eş-biçimlilik tezini tamamen yanlışladığının gösterilmesidir. Açıklamak gerekirse, öğretmen, birçok çalışmanın da ifade ettiği üzere, kapalı uçlu BCD-temelli hamleleri sıklıkla kullandığında, öğrencilerin cevapları öğretmenin epistemik otoritesi gözetilerek değerlendirmeye tabi olmakta (D: Değerlendir hamlesi), öğrenciler dolayısıyla sınıf söylemine bilişsel katkıda bulunma fırsatlarını kaçırmaktadırlar. Bu durum aynı zamanda şu tezi de beraberinde getirmektedir: öğretmen üçlü diyalogları daha açık uçlu hale getirmeli ve takip soruları ve geri dönütlerle öğrencilerin sınıf söylemine katkılarını desteklemelidirler. Ancak yapılan çalışmalar aynı zamanda kapalı uçlu BCD-temelli üçlü diyaloglarla da öğrencilerin sınıf söylemine maksimum derecede katkıda bulunabileceğini göstermiştir. Desteklemek gerekirse, öğrencilerin verdikleri cevaplara bağlı ya da bitişik olmadan açık uçlu, takip sorularının ve geri dönütlerin öğretmence söylemsel bir biçimde sergilenmesi, öğrenenlerin sınıf söylemine katkısını en düşük düzeylere kadar geriletebilmektedir. Öte yandan, kapalı uçlu, salt BCD-temelli üçlü diyalogların oluşumu, öğretmenin özellikli pedagojik hamleleri ile öğrenenlerin verdikleri cevaba bağlandığında ya da öğretmen bitişik bir BCD-temelli diyaloglar bütünü yarattığında, öğrenenlerin sınıf düzeyine katkısı maksimum derecelerde seyredebilmektedir. Dolayısıyla esas olan sınıf söyleminin hangi formatta yapıldığı değil (açık uçlu ya da kapalı uçlu), öğretmenin belli başlı hamlelerle öğrenenlerin verdikleri cevaplar üzerinden sınıf söylemini devam ettirip ettirmediğidir.

Tartışma ve Sonuç: Sonuç olarak öğretmenin gerçekleştirdiği pedagojik hamlelerin söylemsel amacının, hamlelerin içinde gerçekleştiği yapısal formattan daha önemli olduğu anlaşılmıştır. Ayrıca, tüm türetilmiş ve bu çalışma bağlamında yeniden üretilen tezlere ek olarak, sınıf söyleminin formatının ve pedagojik anlamının bazı durumlarda eşleşebileceği, dolayısıyla eşleşme-uyuşma tezinin makul olabileceği, bazı durumlarda ise eşleşmeyeceği, dolayısıyla eşleşme-uyuşma tezinin makul olmayabileceği gibi başka bir argümana da ulaşılmıştır. Sınıf söyleminin yapısal formatının ve pedagojik anlamının eşleşmesini ya da zıtlaşmasını sağlayan nokta ise, bu çalışma bağlamında, sınıf içinde öğretim programlı temelli olacak şekilde ele alınan olgu ya da konuların olması durumudur. Örnekse, insan vücudundaki kemiklerin sayısı, fonksiyonları ve isimleri müzakereye açık olan bir konu olmadığından, yani düşük *öğrenme talebi* yarattığından, sınıf söyleminin formatı ve pedagojik anlamı eşleşebilecektir. Yani kapalı uçlu salt BCD-temelli üçlü diyaloglara, anlamı bilginin transferi olan bir pedagojik anlam eşlik edebilecektir. Bu bağlamda öğretimin mikro perspektifte nasıl kurgulanması gereği ile ilgili çeşitli önerilerde bulunulmuştur.