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On the relevancy of using Vygotsky's theoretical framework to legitimize dialogic teaching/learning

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Abstract: This paper is a response to the growing acceptance that dialogic teaching/learning focusing on the role of intersubjectivity in developing knowledge and reasoning, particularly when this intersubjectivity is mediated and maintained by means of language is an appropriate reaction to the weaknesses of direct instruction within the Vygotskian framework. In this paper, the theoretical background of dialogic teaching/learning inspired by Vygotsky's cultural-historical theory is elaborated to discuss the crucial elements of the way in which the theoretical relevance of this stance in education has evolved from Vygotsky's theory.

Key words: dialogic teaching/learning, innovations of teaching/learning, language as a semiotic tool, Vygotsky's cultural-historical theory

Introduction

When analysing how contemporary educational discourse approaches possible transformations of classroom settings it is hard to overlook the importance of the role of language and communication. One of the most inspiring theoretical frameworks which helps legitimise this focus on language and communication is Vygotsky's cultural-historical theory. This is because this theory interconnects all important aspects of human bio-social and cultural development (Cole, Wertsch, 1996), while enabling us to see the source of individual cognitive development in socio-cultural practices and the specific role of cultural tools (especially language) within that. It also

simultaneously provides a framework as to how education might specifically contribute to the cognitive growth of individuals focusing particularly on language as a semiotic tool enabling mediation of the individual's cognitive processes. It is noteworthy that Vygotsky's work has been interpreted and further theoretically and empirically elaborated to demonstrate that it is not communication per se, but learning to use language as a semiotic tool that enables us to convert the meaning and function of a specific cultural tool into psychological tools. These tools are required in the transformation of the cognitive behaviour of individuals. Those who seek to innovate in classroom settings in accordance with Vygotskian theory are mostly attracted by the interactive nature of interpersonal communication. The social and individual dimension of learning and development is predominantly reflected in the use of language as a means of maintaining activity in the classroom, in expressing and discussing ideas, and as expressed in the attitudes of all the learners. There is little discussion of the acquisition of specific cultural tools important for developing higher psychological functions.

In this reinterpreted form, Vygotsky's theory has become highly influential in transforming the essence of current school-based teaching/learning and essential for effective teaching/learning that develops the highest cognitive potential in students. Critics of the direct instruction disconcerted with the low level of student activity in the classroom, may find Vygotsky's theory useful in focusing attention on the importance of problem-solving tasks and on the role of teacher as facilitator. For those who are critical of the weak links between school-based learning and everyday life and the requirements of the labour market, this theory provides a potential means to develop the student competencies required in the information age and the service economy (Wells, 2000). Vygotsky's theory has gradually received the status of a complex background which can be fruitfully used to stimulate student development and to help them master the means for transferring competencies, knowledge and skills from current to future activities in a generalised form instrumental to thinking, reasoning and problem solving.

Impact of Vygotsky's theory on educational theory and practice is evident in a rich discourse led to adapt Vygotsky's concepts to innovate classroom settings, mainly to eliminate the dominance of direct instruction in the classroom. Particularly, with specific focus on one of the most famous Vygotsky's concepts, the zone of proximal development, to refer to the ability to solve problems that are beyond the ability of the individual through the guidance of an experienced other (adult or peer), with the potential to stimulate development (for instance, Wertsch, 1979). More recently, there has been a focus on interactively organised teaching/learning in which students can profit from and via social interactions, which are assumed to be

a rich source of social plans for dealing with problems which are transferable to the repertoire of individual abilities. In focusing on problem solving the relevancy of cultural tools is questioned mainly because of the need to identify the most effective means of dealing with problem-based tasks which can be transferred to the more general context of problem resolution. The reason the use of language in communication has attracted the attention of scholars and practitioners because it is assumed that interactive problem-solving is the source of new competencies and higher forms of psychological functions, where language is used to negotiate, express points of view, and so forth. But as deeper analyses of the broader context of Vygotsky's work show, mainstream educational discourse has taken inspiration from Vygotsky through misconception rather than through a systematic understanding of the broader context of his theory (Gredler, 2012). In this context, it is questionable whether educational projects or strategies that have been developed based on a misconception of Vygotsky's theory can be used as vehicles for innovative classroom practice that has the potential to initiate cognitive growth which influences the cognitive behaviour of individuals. If they cannot then focusing the attention of scholars and practitioners on minor details of Vygotsky's work is misguided and could lead to the questionable impact on higher psychological functions of pupils as the consequence.

Since one of the most promising prospects for improving the quality of education using the Vygotskian framework is based on elaborating the relationship between language and the development of higher psychological functions, this paper will analyse whether innovations of classroom discourse developed within this perspective can be seen as enrichments that correspond to other components of Vygotsky's theory.

Social Embeddedness of Higher Psychological Functions

The role of language in developing higher psychological functions cannot be discussed without discussing the role of cultural tools because language is assumed to be a unique cultural tool with the special potential to restructure the cognitive behaviour of individuals. In Vygotsky's theory, the development of higher psychological functions is triggered by the use of a specific means – cultural tools – which increases the effectiveness of intentional human action in society. While acquiring the meaning and function of a cultural tool, the novice experiences more effective strategies for dealing with certain situations which evolve in the social-cultural community. When the novice learns how to use these strategies, the meaning and the function of the cultural tools is separated from the material action and affects individual-cognitive processes (Vygotsky, 1978). This is possible because cultural tools are

> embodiments of certain cultural practices, crystallized templates of action, schematized representations of certain ways of doing things in human communities … [and] their acquisition by a child is an integral part of developmental processes, the pathway that defines the very essence of human development and constitutes its content. (Stetsenko, 1999, p. 246-247)

Since their existence and use does not concern individual experience, the collective sharing, use and transgenerational transmission of these tools involves interpersonal communication and symbolic representation (Kozulin & Presseisen, 1995). When the meaning and function of cultural tools is mediated in interpersonal activity, new, culturally more relevant, forms of activity permeate the structure of the human mind and transform the way in which the psychological functions operate. During this process, the individual learns how to act in a culturally more appropriate way, which impacts on how his/her mind is involved in the activity.

Cultural tools are useful means for deploying culturally more relevant strategies for dealing with problem situations, which exceed the effectiveness of the strategies currently available to individuals as a part of the repertoire of independent action. Since the way in which cultural tools are used in activities represents a cultural practice evolved for certain purposes and to deal with situations, the use of cultural tools in activity is not accidental but follows a certain social plan of activity interconnected with the meaning and function of the cultural tool. Through mediating the meaning and function of the cultural tool, the novice's actions should be transformed so as to pursue an effective way of dealing with the problem. The novice takes on the perspective of a culturally more competent other (who demonstrates the meaning and function of the cultural tool in the activity) and from that the novice acquires the socially relevant plan of activity. This involves transforming psychological functions such as memory, attention, perception or thinking and so forth, as it is expressed in one of the most famous explanations of the social origins of higher psychological functions:

> Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals. (Vygotsky, 1978, p. 57)

In interpersonal situations where emphasis is placed on promoting the ability of individuals to master and maintain intersubjectivity in social activities and to incorporate the other's perspective into the individual plan of activity (Díaz, Neal & Amaya-Williams, 1990), the originally social act (interpsychological function) becomes separated from the context of activity and is internalised as a function of the human mind (becoming an intrapsychological function). Vygotsky (1962) identified language as the means by which higher forms of cognitive functions are transferred from the social plane to the individual plane via a process called internalisation. Linguists, psychologists and educators have attempted to establish which qualities of language are responsible for this transformation and to analyse and explain the potential of this in seeking to elaborate the consequences for the development of higher psychological functions, particularly in classroom settings.

Specific Role of Language in Development of Higher Psychological Functions

Vygotsky (1962) sees language as a semiotic tool that enables the individual to retain substantial features of the activity in a generalised and abstract form which is prerequisite to representing the important aspects of the experience in the mind as mental objects (Valsiner, 2001). Since language is used in this situation, existing human knowledge can be acquired by individuals, firstly being part of shared, interpersonal activity is internalised to become the object of thinking and interpersonal communication independent from material and perceivable aspects of the world. As R. Hasan states,

only language at once defies time, is capable of being reflexive, classifies reality, construes communicable human experience, and articulates the many voices of a culture with equal facility (2005, p. 134).

The use of language thus enables the individual to recall and reflect on past events, plan future actions and consciously contribute to the ongoing activity. This enlarges the scope of activities individuals can become involved in because the individual is consequently no longer dependent on material and visual support for activity (ibid.).In joint culturally relevant activities, language is used as the medium through which the social plan of activity is shared with the novice and through which the culturally more competent other guides the activity. While engaged in such an activity, the novice experiences the way in which language is used to guide the joint activity and adopts the social plane of activity as his/her own. Later, while completing similar activities, the novice gives guidance conveying via external speech similar expressions to those the culturally competent other had used to provide guidance before. With repetitive use, these expressions become abbre-

viated and take on the form of internal speech (Gal'perin, 1989). In this form they can function as a tool for thinking about activities, for choosing possible strategies of activity, for thinking over possible transformative steps, without needing to be immersed in the context of material activity or dependent on perception. Language captures significant features of culturally relevant activities from the flow of experience and they become the substance of the intrapsychological domain without losing their external manifestation. While other semiotic tools also enable communication, collaboration and problem solving, only linguistic signs mediate the transformation of mental processes to a form in which they can function under *conscious realization* and *voluntary control* (Hasan, 1995). Mediating the strategy for dealing with the culturally relevant activity by means of language thus means that the dependency of individuals on externally provided strategies of activity can be weakened and independence and full control over psychological functions can be achieved – this is the most notable feature of higher psychological functions (Vygotsky, 1978).

Implications for the Field of Education

The explanation that higher psychological functions have their origin in social relationships, especially in those enacted between the novice and the culturally more competent other by means of cultural tools incorporated in activity as a strategy for dealing with culturally relevant situations has been developed as a core principle in Vygotsky's cultural-historical theory and has significant consequences for the field of education. Vygotsky's original work also included suggestions on how to rethink the essence of educational content and how to develop instructional methods that would mediate the development of higher psychological functions in students. Most contemporary initiatives focus mainly on the potential use of the zone of proximal development in developing educational strategies for going beyond the existing competencies of *all* students and on developing the social context of learning assumed to be the universal source of cognitive growth in students. However, Vygotsky's Russian followers (for instance, P. Ya. Gal'perin, D. B. El'konin, and so on) elaborated the instructional implications, focussing on mediating highly developed cultural tools – theoretical concepts – organised around the clear structure that is peculiar to academic thinking and not adherent to everyday experience and learning (Karpov, 2003). As Tul'viste (1989) concluded from Vygotsky's work, theoretical concepts represent a new way of using words in thinking because they are part of a conceptual system and their meaning is determined by other concepts. They are cognized separately from their *denotata* and form supraempiri-

cal connections. Separated from external, material reality, the learning of theoretical concepts requires an understanding of the system of knowledge that goes far beyond the individual's current and even potentially accessible prior experience. The mediation of theoretical concepts thus represents the most culturally developed means of instruction with the unique potential to develop higher psychological functions as described by Vygotsky. Even today, the key importance of cultural tools (with a specific focus on language as the semiotic tool) in developing higher psychological functions has been elaborated in minor interpretations of Vygotsky's work, such as general issues relating to semiotic mediation (Valsiner, 2001; Hasan, 1995), or the quality of cultural tools mediated via instruction (Stetsenko, 1999) or the potential of different forms of mediation in developing psychological functions of different structural qualities (Karpov & Haywood, 1998; Kozulin & Presseisen, 1995; Hasan 2002). These authors have developed aspects of Vygotsky's theory which remained unclear or unfinished in his original work, with the aim of innovating in education theory and practice.

More often, Vygotsky's theory has proved attractive to those seeking greater activity and a different context for learning in relation to classroom practices and highlighting the mediating role of the socio-cultural environment in introducing cultural rules, values and functions through social interaction. While the role of cultural tools (including semiotic systems, especially language signs) in learning effective ways of acting is recognised only formally, social interactions as such are viewed as vehicles for developing higher forms of cognition in individuals. They believe that individual cognitive development is distributed between the learner and the culturally more competent other (Hutchins, 1996). There is recognition of the social context of leaning, which is further elaborated in order to demonstrate how supportive it is in maintaining interaction during classroom activities and in developing the divergent thinking of students. There is little discussion of the potential wielded by cultural tools of various qualities and forms and by the different ways in which their function may be mediated in purposeful human activity. In particular, there is scant consideration of what kind of unique cultural tools might be present in the tradition of formal education (but not in everyday learning), which mediate and transform human cognition efficiently and in a way that other contexts are not able to mediate (Arievitch & Stetsenko, 2000). As we will demonstrate in what follows, it is the social context for learning and the modified teacher and student roles that have mainly encouraged scholars and practitioners to apply Vygotsky's ideas in classroom practice. Consequently, classroom social interaction involving communication, but with no significant connection to the scientific concepts is seen as the cornerstone for developing a thinking community – one

in which learners are able to express their own ideas, ask questions, accept the ideas or viewpoints of others, discuss possible solutions, and maintain this attitude long-term.

Dialogic Shortcuts in Applying Language as a Cultural Tool in Teaching/Learning

If we dismiss the notion that school based teaching/learning mediates higher psychological functions through the teacher's use of activities and selected cultural tools to develop powerful cognitive strategies and reduce student dependence on the supervision of others or on contextual support, then education tends to focus on the interactive nature of the teaching/learning process – a standpoint familiar to social constructivist perspectives on teaching and learning. Here, the role of language in teaching/learning is viewed in terms of the construction of meaning and as the appropriation of socially derived forms of knowledge. These are not internalised directly, but through individual transformations requiring *interaction*, *negotiation* and *collaboration* (for a more detailed explanation, see for instance Palincsar, 1998).

The role of language is of particular interest to scholars and practitioners because it supports the interactive nature of learning. When students perform meaningful activities there must be constant interplay between student and teacher and between student and student. As a consequence, the need to reconstruct the function of the cultural tools in cooperation and interaction with someone who is aware of the meaning of these cultural tools is not discussed as a leading strategy in teaching/learning (Stetsenko, 1999). Mediation of culturally valued forms of psychological functioning in interactions between students and culturally more competent others in interactive but asymmetric relationships loses significance, since the construction of meaning requires more than one perspective. These interactions, as Wells (2007) states, are not found in classrooms where the teacher provides a monologue on "what is known" and what is taken to be true. On the contrary, the use of *dialogue* as a leading strategy for learning provides space for the negotiation of meanings, especially when students are engaged in meaningful activities requiring collaboration.

The participatory perspective in educational discourse has thus come to dominate educational theory and practice as a result of the growing acceptance that all knowledge is distributed among the members of society no matter how culturally experienced and competent they are. All learning should be treated as "a sociocultural process based on negotiation of values and social co-construction" (Matusov, 1998, p. 335) so as to respect this as-

pect of knowledge and knowing. Before this perspective can be incorporated into classroom practice, schools must relinquish the dominant position of the teacher in the classroom and his/her key role in mediating culturally valued ways of dealing with problems (as social plans of activity ready to be internalised). Learning in schools should be viewed as constant interplay between the teacher and the students, or among students as a community of learners, where everyone can contribute to the process of learning in a valuable way. Participation in sociocultural activity is thus conceived of as a source of development. The individuals constantly renegotiate responsibility for the activity, redefining the position of those participating and change the course of sociocultural activity (ibid.). Emphasis is placed on dialogic classroom activities performed using discursive practices specific to the target knowledge area so that students are provided with the most effective platform from which they can construct meaning. Dialogic learning is thus gaining popularity in classroom practice because

> knowledge is most fully achieved in the dialogue between people who are together trying to solve a problem, construct an explanation, or decide on a course of action. (Wells, 2007, p. 264)

Co-construction of knowledge, "knowing together", is the guiding principle among communities of learners in classroom settings inspired by Vygotsky's work. In contrast to what Vygotsky argued, substantial progress in learning and development is not seen as dependent on teacher-based guidance.

Instead, competencies developed through participation in sociocultural activity are seen as the consequence of the co-construction of knowledge in dialogic settings, particularly if they contribute to learning specific reasoning and argumentation strategies peculiar to particular domains of knowledge (Pontecorvo, 1993). While discussing the issues, individual perspectives can be expressed and compared and members of the collaborating group have to achieve a consensus on how to describe the problem and the steps to be taken in order to complete the task successfully (Burbules & Bruce, 2001). The participants explain their ideas and these are subjected to peer review which, it is assumed, enables the participants to differentiate between the various ideas and select those deserving further consideration from the others, and thus avoiding discussion of marginal, non-productive aspects of the problem (Michaels et al., 2007). Problem-solving discussions among communities of learners are therefore often associated with inquiries comparable with inquiries in scientific communities (Brown & Campione, 1994). Forman and Larreamendy-Joerns (1995) state that new task goals

can emerge in social interactions, so the social context of learning not only facilitates or impedes the learning process but also changes what can be learned. Learning organised as dialogue thus opens up new dimensions of learning not present in classroom settings relying on the dominant position of the teacher in the classroom and his or her dominion over knowledge.

To avoid reducing the role of language to a semiotic tool designed specifically to develop higher psychological functions, Wells (1999), a prominent advocate of a dialogic approach in education, introduced the concept of *dialogic inquiry*. This explains the development facilitating the potential of language in leaning organised as semiotic apprenticeship. Having identified the role of cultural tools in learning as being specifically attributed to knowledge of academic disciplines, he emphasizes that school activities should introduce learning as problem-solving framed with communication genres peculiar to the academic disciplines. To achieve this, students engage in joint, inquiry-based activities in which they can co-construct significant attributes of the culture and "sources of the culture", while discussing and solving problems. These problem-solving activities are organised to provide opportunities for learning how these specific, academic, communication genres are structured and are used to contribute to solving problems raised within classroom learning more effectively, with specific focus on written language genres (specific problem-solving frames, such as formulating questions and hypothesizing, searching for information in books, writing notes, preparing tables of results or a protocol, writing a report about the inquiry, and so on). While students work on the problem, they discuss possible steps that may help them reach a solution, use information to support or reject the solution and use these communication genres to organize the process of thinking about the problem and to prepare a report on how this problem can be solved. As Wells (ibid.) suggests, even these communication genres are not necessarily used in a strict and formal way (formal attributes of communication genres are part of the students' inquiry), they are to be leading frameworks for students to achieve and to present solutions of problem tasks comparable to those achieved in the academic field.

Although there is discussion in dialogic inquiry of the potential of academic disciplines developing new strategies for dealing with the problem, this is focused more on how academic disciplines are seen externally to approach the problem without acknowledging the values of the academic knowledge. Through negotiating ideas, knowledge and values, students learn to appreciate the process of knowing more than knowledge alone. Thus teachers and official knowledge are losing their dominant position in the classroom, while knowledge is not taken to be *what is known*, what is taken to be true, as a representation of the knowledge of society with inner

logic and cohesive power for maintaining society as a whole (Wells, 2007). Within this theoretical standpoint, knowledge and knowing are distributed among all participants engaged in dealing with the problem, established as the constant, gradual co-constructing of frames for dealing with problems and for presenting solutions, with no aspiration to mediate clear solutions to problems even when they are accessible via the mediation of particular scientific concepts. The question of how to provide students with systematic knowledge and enable them to justify their standpoints using empirical evidence seems to play a minor role in discussions on how to implement Vygotsky's theory into the classroom within this perspective.

The Missing Fragments of Interpretations

Traditional classroom practice is often criticised for its apparently weak potential to initiate and maintain learning in the classroom (Pontecorvo, 1993). However, there is still one unanswered question concerning the dialogic teaching/learning: Is education not seriously focusing on the order and coherence in experience and information, teaching students to just take the information as it comes and take reasoning as a kind of personal response to the world, not troubling itself with information and facts the foundation for innovations in classroom practice, sustainable to represent the Vygotkian perspective in the classroom (Resnick & Hall, 1998)? These issues cannot be considered within the Vygotskian framework unless there is further consideration of how different sorts of cultural tools enable knowledge and control over individual cognition to develop in a form which maximises cultural development (Arievitch & Stetsenko, 2000). This requires critical analyses of how language operates as a semiotic tool in the human mind and how cultural tools can be selected that have the potential to change the cognitive behaviour of individuals peculiar to how higher psychological functions are developed.

First of all, such analyses should focus on the role of language in development-stimulating learning. Vygotsky never raised the issue of developing problem-solving skills or competencies while working on the problem solving task. In his analyses he demonstrated how problem-solving in collaboration with an adult or peer can encourage more dynamic approaches to development and encourage the more competent other to see the potential of future development. But collaboration with an adult or peers alone should not be considered as a mean universally stimulating development because we know little about the functional features of collaboration, the elements of the problem-solving process which may stimulate development (Moll, 1990), especially the various parts of the dialogue-realised activity. Even if we were to consider collaborative problem-based teaching/learning (which must be

followed by dialogue) to be a form of effective learning (Mercer, 2008), we would still have to establish whether all kinds of dialogue have this potential.

Secondly, even if we consider dialogic and interactive learning to be an effective strategy for increasing student activity in the classroom, the role of language requires rethinking in relation to different phases of learning. Analyses of this nature should take inspiration from Gal'perin's work on Vygotsky's concept of internalisation (Gal'perin, 1989) in which he demonstrated how the role of language is transformed throughout the course of dealing with the problem when the social function of language is transformed until it becomes a psychological tool (from external to internal speech). This is because if the role of language changes while being transformed from external into internal speech, educational strategies should respond to this within the parameters of the educational setting and the role of all the individuals involved in learning/teaching.

Thirdly, there should also be discussion on the role of language in learning as a semiotic tool in relation to the role played by other cultural tools in learning and development. As Cole (1996) makes clear, all artefacts (cultural tools) are material and conceptual in nature because they were invented for purposeful human activity. The way in which an object is conceptualised has its roots in the way the cultural tool has evolved in goal-directed human activity and how it is used and the awareness of the existence of the cultural tool simply influences human thinking and ways of talking about it. Since the meaning and function of cultural tools is invented and actively reconstructed in the human community, there must be cooperation and interaction with other people who already understand the meaning of the cultural tool (Stetsenko, 1999). However, the learning function and meaning of the cultural tools may not simply influence the individuals' experiences, knowledge or skills. Some function as semiotic tools (especially language) and play a key role in the emergence of consciousness (Wells, 2007) and in gaining control of and mastering cognitive processes. As Gredler (2009) explains, in the Vygotskian tradition

> symbols [semiotic tools] selected to organize and control one's cognitive behavior change nothing in the object of the task nor are they a method to improve or perfect a cognitive operation. Rather, they redirect or reconstruct the individual's cognitive behaviour. (p. 4)

Since it is focussed on language, the dialogic nature of teaching and learning should increase unfettered discussion, reasoning or the sharing of ideas in the classroom but it redirects attention away from the challenges in-

volved in basing teaching/learning on highly advanced cultural tools, which are selected as the subject of education transferable into intrapsychological level as psychological tools. As Gredler (ibid.) points out, there are cultural tools (e.g. words) that can function as psychological tools, but all cultural tools do not automatically become psychological tools. For that, interiorised cultural tools have to restructure one's cognitive processes.

Conclusion

It seems that if a dialogic approach is adopted, then innovations powerful enough to overcome the weaknesses of direct instruction are available for classroom settings. And in fact, there is empirical evidence showing that dialogic teaching/learning enables knowledge to be restructured and cognitive processes to take place that are useful in life – emotional distribution of reasoning and thinking, openness to other children's contributions, children's assumption about different and complementary discursive roles within the group and the positive effects of disagreements between children (for instance, Pontecorvo, 1987). However, there is a lack of evidence proving that these classroom practices impact on the development of higher psychological functions as Vygotsky held (1962, 1978) because the process of how cultural tools can help to distinguish thinking from material activity, to develop the ability to deal with problems through independent and self-regulated mental activity and to reach the highest potential of the human psychological system developed with using the most effective – semiotic – cultural tools is barely studied.

Because knowledge is seen as distributed between all participants in the classroom and every student can contribute to solving the problem as he or she decides (regardless of how much their experiences might relate to the topic of inquiry and the nature of their cultural and social backgrounds) and all contributions are seen as being equally valuable (Wells, 2000) teaching/learning based on dialogue necessarily undermines the value of the systematic structure of knowledge peculiar to academic disciplines and to the systematic structure of the way in which they are mediated. Particularly, when the teacher's role is to orchestrate discussion – focussing students' attention and facilitating negotiation in the interests of consensus building (Forman, 2000), while

> partially relinquishing control over the flow of discussion, giving up the habit of evaluating each student contribution, and allowing students to initiate when they have something that they consider relevant to contribute. (Wells, 2007, p. 264)

With little attention being paid to the question of educational content, dialogic teaching/learning bypasses the potential role scientific concepts may play in the development of higher psychological functions while the individual is involved in theoretical (conceptually based) generalisations or at least has access to the system of knowledge in a generalised symbolic form allowing them find their way around the subject in a systemic way (Arievitch & Stetsenko, 2000). If this perspective is not included, then the potential Vygotsky's theory has to provide innovation in school-based teaching/learning cannot be fully realised.

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