

THE INTEGRATED CURRICULUM, CLIL AND CONSTRUCTIVISM

SONIA CASAL MADINABEITIA
Universidad Pablo de Olavide

ABSTRACT. This chapter explores the interplay between two elements increasingly present in teaching and learning: the integrated curriculum and CLIL. Common underpinnings are taken to be the integration of knowledge, meaningful cognitive connections and the design of tasks that may be useful in students' life outside school. The paper suggests that the connection between the integrated curriculum and CLIL is precisely their shared conception of learning, where the three above mentioned elements fit: constructivism. The chapter provides an overview of constructivist theory, underlining the idea that it is essential for practitioners to be familiar with its tenets in order to successfully implement the integrated curriculum and CLIL.

KEY WORDS: *Integrated Curriculum, CLIL, Constructivism, L2 Classroom.*

1. INTRODUCTION

The integrated curriculum, also named interdisciplinary teaching, thematic teaching or synergistic teaching (Lake 1994)¹, can be defined as being “organized in such a way that it cuts across subject-matter lines, bringing together various aspects of the curriculum into meaningful association to focus upon broad areas of study” (Shoemaker 1989: 5). Unlike most courses of study at present, the integrated curriculum searches for themes or issues (‘broad areas of study’ in the above definition) that provide a general framework where more than one curricular area can take part with its own lessons and activities.

The various areas that constitute the integrated curriculum study the same theme from different but interrelated angles of specialization. In an integrated curriculum, the different fields of knowledge do not stand in isolation but overlap in such a way that knowledge and skills learnt in one subject can be transferred to others. (Lorenzo *et al.* 2005: 28). This interconnection allows students to activate knowledge already acquired,

building logical associations between processes, data, experiments, facts, etc. covered in class, which become more meaningful for their learning. In a second sense of ‘meaningfulness’, the tasks in which learners are engaged within an integrated curriculum are meaningful in the sense that they should be useful for learners’ lives outside school. As Lake (1994) states, “schools must look at education as a process for developing abilities required by life in the twenty-first century.” This is in accordance with what Skehan (1998: 269) stated about the two main features tasks should comply with: meaningfulness and connection with real-world activities. In an integrated curriculum, tasks foster intellectual curiosity and are aimed at a more comprehensive view of matters dealt with at school.

National (as in the United States) and regional governments have been promoting the integrated curriculum as a remedy against poor academic results or low language proficiency levels. In Spain (where documents such as the *Eurobarometer* (2006) have proved that 56% of the population does not speak any language apart from their mother tongue), moves towards developing higher L2 competence have been initiated. In Andalusia (the largest region in Spain), the education regional ministry has strongly recommended the design of a language integrated curriculum which would cater for similarities (and, therefore, integration) between L1 and L2, so that awareness and strategies developed in one language may be ‘recycled’ while learning the other. (Lorenzo *et al.* 2005: 7).

Meanwhile, CLIL has become a powerful vehicle for L2 competence and proficiency levels. Scholars (see Marsh 2002) argue that an L2 is better acquired through –as in the case of the integrated curriculum– integration: the integration, in this case, of content and language that CLIL promotes. While students are discussing and studying a variety of chosen topics (derived from academic disciplines or from the target language culture), they are using the L2 as a vehicle. The final aim of this content and language integration is the development of a “plurilingual and pluricultural competence” (*Common European Framework*: 169) which will form the basis for communication in the European context, fostering linguistic tolerance and diversity (see also Lorenzo this volume).

The ‘meaningful associations’ described in relation with the integrated curriculum are also present in CLIL. L2 teaching and learning in CLIL settings takes place in a rich and meaningful communicative context where learners are offered the opportunity to practise L2, naturally inferred from a variety of topics (Met 1999). The fact that learners deal with topics in a language different from their own, “allows better association of different concepts and helps the learner go towards a more sophisticated level of learning in general.” (Marsh 2003: 8)

Finally, the integrated curriculum and CLIL share a concern with connecting tasks in the classroom with real-life events (*savoir-faire* in the *Common European Framework*). Coonrod and Hughes (1994: 319) argue that projects may be an effective device to introduce real events in CLIL. Projects connect life inside and outside school “so that they may extend and refine these competences and use them effectively in particular domains.” (*Common European Framework*: 174).

The integration of otherwise unconnected areas, relevant cognitive associations and meaningful tasks as well as a connection between life inside and outside school in CLIL could be summarised in Genesee's words as a "creative construction", glossed as a context "in which learners are encouraged to experiment with linguistic forms in order to communicate with one another and with their teachers about academic and social matters." (Genesee 1994: 2). This 'creative construction' Genesee mentions is at the core of constructivism, defined by Donato and Terry (1995: 98) in the following terms:

Constructivism is a theory of learning which emphasizes the importance of the learner's active construction of knowledge and the interplay between new knowledge and the learner's prior knowledge. The key tenet of constructivism theory is that people learn by actively constructing knowledge, weighing new information against their previous understanding, thinking about and working through discrepancies and coming to a new understanding.

By combining subject areas (or content) and language, the integrated curriculum and CLIL envisage the construction of knowledge in a comprehensive way, connecting the old information with the new and analyzing the same topic from different angles. From a constructivist perspective, students are idealised as active, intuitive and reflective participants (Cubero 2005: 111). If they are to perceive some progress in learning, the curriculum should be related to the learners' interests and their previous knowledge. Teaching cannot consist of simply delivering new and unconnected information. Although the integrated curriculum and CLIL can work separately, it is interesting to combine them in school contexts because constructivism gives both elements the necessary foundation: to understand how an integrated curriculum should be designed, and how CLIL should be implemented in the classroom.

2. CONSTRUCTIVISM

Although the work of personalities such as John Dewey (1859-1952) in the United States show that constructivism has been in the pedagogical arena for some time now, usual practices in the classroom have generally presented information to be absorbed with no modification, since the group of students has been viewed as a *tabula rasa*, passive assembly. The teacher, for their part, has had the knowledge to be poured on students and has generally decided what and how they should learn. Students have hardly ever had the chance of looking for information to be analysed and discussed or of creating relationships with ideas already explored. (Hertz-Lazarowitz 1995: 71).

This chapter aims to explore constructivism, with its emphasis on the active construction of knowledge, as the *raison d'être* for the presence of integrated learning in CLIL's implementation. The definition by Donato and Terry above pinpoints the three aspects that affect the design of the integrated curriculum and the implementation of CLIL to be dealt with throughout the paper: the learner's active construction of knowledge, the cognitive controversy (*discrepancy*) that leads to the understanding of a new notion and

finally, the negotiation of meaning by means of dialogue that learners have to undertake in order to understand each other, reaching a higher level of cognitive and linguistic competence. Given the number of CLIL programmes being adopted, it is important for practitioners to know the principles of this theory of learning so that the implementation of CLIL through the integrated curriculum is successfully accomplished.

2.1. THE ACTIVE CONSTRUCTION OF KNOWLEDGE

From a constructivist perspective, learning is the result of the mental activity carried out by the learner, consisting in building and incorporating the new explanations to their already structured web of meanings. Abercrombie (1979: 26-27) argues that learning any new element necessarily implies *unlearning*, since our knowledge tends to be built around an integrated whole and there are parts within this whole which will be modified if new information is to be taken into consideration. That is why previous experiences and knowledge are considered key factors influencing learning: they do not only allow the learner to make initial contact with the new content but they are also the bases for constructing new meanings (Slavin 1995: 163). Any learning will be long lasting if the student is able to establish meaningful connections between their previous knowledge and the new item presented as the learning objective. An important element of the constructive activity on the students' part consists in modifying and updating their previous understanding so that they can grasp the connection with the new meaning.

But, what techniques do students use to remember information or how do they integrate the new learnt elements with the old ones? The answer brings forward Vygotsky's works (1978; 1992), which highlight the essential bond that links language and thought, explained by the function language has as the mediator of human knowledge. If this is true of the first language, it obviously also holds for subsequent languages. This mediation suggests that language offers an open window into the students' processes of constructing knowledge. Three main strategies are suggested so that CLIL teachers may know what is occurring in their students' minds: a) designing tasks based on meaning rather than on form; b) asking students to explain ideas or reasons to their peers (peer tutoring); c) asking students to give and provide help.

Regarding tasks based on meaning rather than form, scholars such as Hertz-Lazarowitz (1995: 81), recommend progressing from tasks that simply require remembering information to more complex tasks demanding more critical and elaborated thought such as identifying the important information, summarising an opinion, explaining a mindset or combining different sources of information. Tasks in the classroom should promote, according to Hertz-Lazarowitz, activities such as the identification of problems, the organization of a possible list of answers/solutions, the gathering of relevant information and the presentation of reports. Such tasks do not just describe a process of memorising new data but of building meaningful connections with the existent cognitive structure in students' minds.

An interesting aspect in the implementation of tasks that ask for critical thinking is that when not engaged in discourse with others, students may be engaged in internal discourse: they may be talking aloud to themselves about the difficulty of a concept, how to carry out the task, what steps to follow. These self-directed utterances are important because they have the added value of making students take control of the task through the language, being able to internalise the notions presented in the task. McCafferty's investigations (1992; 1994) have consistently revealed that it is important that students speak aloud to themselves, as a means of self-regulation.

Asking students to explain ideas or reasons for these thoughts to their peers (peer tutoring, where a student –usually more expert– teaches a classmate) is often quoted as an excellent opportunity for sharing resources and knowledge, benefiting both the teacher and the learner (Oxford 1997: 443). Clarifying, reasoning, as well as giving explanations to peers in the CLIL classroom may facilitate understanding and the incorporation of new information. When individuals are asked to put thoughts into words, they become aware of what they know, what they need to know and what they are wrong about. By verbalising their thoughts, the teacher also has the opportunity of clarifying concepts that may have stayed unclear (Webb 1995: 102-103)

Finally, providing and receiving help from other classmates may also be very effective in order to actively construct knowledge in educational contexts. Webb (1989: 2) discusses the elements needed for help to be efficient: 1) help must be relevant; 2) the helper must stay at the same cognitive level as the student needing help; 3) help must be offered soon after the student has asked a question or made a mistake; 4) the student being helped needs to really understand the explanation; 5) the student in need of help must be willing to accept this help. While providing and receiving help in the CLIL classroom, students are using L2 in the social context of the classroom. Not only do they have opportunities for extended discourse, but chances of improving their oral fluency also become higher (Lynch 1996: 121).

Designing tasks that activate students' previous knowledge and based on meaning rather than form; asking students to explain ideas or reasons to their peers (peer tutoring) and asking students to give and provide help have been suggested in this paper as strategies directed to actively construct knowledge in CLIL contexts. These may lead to contradictions with the already existing notions, provoking cognitive controversy, the focus of the next section.

2.2. COGNITIVE CONFLICT

Johnson, Johnson and Smith (1990: 200) define cognitive conflict as “the conflict that arises when one person's ideas, information, conclusions, theories, and opinions are incompatible with those of another, and the two seek to reach an agreement”. Contrasting points of view from different individuals may provoke an imbalance which forces the restructuring of 'old' information. But it is also possible that this imbalance occurs inside the same individual's mind, as a by-product of an internal contradiction between new and

previous conceptions. In constructivist terms, cognitive controversy is not seen as a problem to be avoided but as a necessary step in constructing knowledge at two levels: a) at an intrapersonal level, as the required antithesis that leads to the final integration of ideas (the active construction of knowledge analyzed in the previous section) and b) at an interpersonal level, as part of decision making and a necessary stage to find a common standpoint (by means of negotiation, which will be dealt with in the next section).

Theoreticians of cognitive development (Flavell, Kohlberg, Piaget) maintain that disagreements between peers where one of them (or both) is forced to understand matters through their peer's eyes are essential steps towards full cognitive development and what is more, towards a positive moral growth. Tjosvold and Johnson (1977: 679) go on to state that adopting someone's perspective challenges this person's mental structure, forcing them to restructure their mindset by looking for more appropriate cognitive structures.

However, Johnson, Johnson and Smith (1990: 207) underline the fact that controversy should be carefully planned so that it results in positive, not negative interaction. The problem arises when situations of disagreement are more frequent than those of agreement and when a group of disagreeing students goes against a single student; when the context is competitive or when the student feels negatively challenged. These conditions make conceptual conflict stronger and may cause a lack of confidence in students, who will be closing their minds to any new reasoning or ideas coming from the outside. Onrubia (1999: 119) mentions that it is important for students not to attribute peers' points of view to their incompetence or their lack of information and to be able to see ideas with a minimum of relativism.

In order for controversy to be constructive, certain conditions are needed. Johnson, Johnson and Smith (1990: 218-219) state that in constructive controversy a) information needs to be accurately communicated; b) a supportive atmosphere where team members feel at ease to challenge their peers' ideas is essential; c) controversy must be valued as an advantage and not as a drawback; d) peers' feelings must also be taken into account so that nobody feels hurt and e) the ultimate aim is not agreement at all times but also showing respect towards divergent standpoints. Results of experiments carried out by these authors reveal that the context where constructive controversy best develops should be one of cooperation and not competition, where a favourable atmosphere towards exchanging feelings apart from thoughts was fostered. In other words, educational contexts should encourage an atmosphere of respect rather than of competition.

In some cases, pairs or groups tend to avoid conflict and this may result in low-quality decisions: the different viewpoints are not discussed and the group may decide to take the majority standpoint, without justifying the reasons for this choice. Since opposite opinions tend to appear as confidence builds up, some time is needed for the group to get to a real understanding, that is, a decision every member is committed to, but keeping at the same time everyone's individuality (McKinley 1983: 14). Reaching a common standpoint by means of reasoning is perhaps one of the most important skills to be developed in students and the way to do it may be through dialogue and interaction, as the following section discusses.

2.3. NEGOTIATION OF MEANING

This chapter has defended the idea that knowledge is actively constructed in each person's mind by establishing meaningful connections between old and new information. These correlations may result in cognitive conflict, which is the route to true learning. However, this active cognitive construction, however individualised it may be in the end, is achieved in a real social context (the classroom) where learners use language (normally the L1 or L2 in the case of CLIL) to deal with topics, concepts and tasks. By means of discourse, learners in educational settings are active builders of their linguistic and their content knowledge. This dialogic exchange is named interaction and is defined as "the process by which the partners in a conversation reach an agreement." (Lynch 1996: 3). The agreement reached at a cognitive level by means of controversy discussed in the previous section is modelled at a verbal, social level. As Vygotsky puts it:

Every function in the child's cultural development appears twice, on two levels. First, on the social, and later on the psychological level; first between people as an interpsychological category, and then inside the child, as an intrapsychological category (Vygotsky 1978: 128).

This principle works for L2 learning as well. Functions at a social level are regulated by language, which is the mediator of thought (see 2.1.). L2 Learning is a social function that grows between individuals by means of language and is later internalized. Learning using language gives the latter a prominent role in education and in L2 learning. The more possibilities students have of interacting through language, the better they will assimilate content and the language itself. This is precisely the aim of CLIL: learning about academic matters and being able to communicate ideas effectively by using language.

The conversational process mentioned by Lynch, where students reach an agreement, differs from traditional teacher-learner interaction and is not necessarily one deprived of difficulties and misunderstandings. Collaboration from both sides is essential: speakers will have to restate their ideas, provide synonyms, repeat the same information with other words, ask questions and simplify statements, if they want their interaction to be successful. This restructuring of dialogic exchanges plays a major role in real conversations in general and specifically in L2 teaching and learning and is called negotiation: "a process in which a listener requests message clarification and confirmation and a speaker follows up these requests, often through repeating, elaborating, or simplifying the original message" (Pica 1994: 497)².

Negotiation opportunities in learner-learner interactions should make the comprehension of messages in CLIL more accessible to both interlocutors: learners who are having communication problems can negotiate solutions, acquiring new cognitive structures and meaning. On the other hand, students who are uttering their messages need to pay attention to the necessary means of expression to communicate what they want to (Ellis, Tanaka and Yamazaki 1994: 449). Negotiation can draw the learner's

attention to aspects of language learning which would have gone unnoticed in a different situation, improving comprehension.

Different authors associate negotiation with input comprehension, which inevitably leads to Krashen's (1985) comprehensible input hypothesis: only when learners have access to comprehensible input, can language acquisition happen. Lynch (1996: 15), for example, highlights that, through negotiation, input is made understandable not only because it is being simplified but because it is being clarified throughout the interaction. Input modifications in learners' conversations aim at understanding the message, essential in progressing in L2. Gass and Varonis (1994 quoted in Gass, Mackey and Pica 1998), for their part, observed that both negotiated and modified input affected comprehension in a positive way. Also, they noticed that previous negotiation affected later productions. The conclusion they reached is that interaction, together with the chance students have of modifying their messages, can influence the use of the language in a positive way.

Other authors, such as White (1987 quoted in Gass, Mackey and Pica 1998) suggest that it is not comprehensible input that is important in L2 learning but rather, INcomprehensible input. Modifications in language discourse driven by something incomprehensible trigger the students' acknowledgement of how inadequate their system of rules is.

Finally, a third set of scholars have underlined the importance of output over input. Swain's output hypothesis argues that advances in a foreign language depend on explicit attention to productive language skills (speaking and writing). Swain (2000:99) holds that producing output, the learner controls the situation, discovering what they can do and what they cannot. Another important role of output in L2 learning is the fact that students see their mistakes. Research carried out by Swain (2000) shows that students become conscious of their mistakes through output. With the aim of filling these gaps in knowledge when speaking or writing, students utilise dictionaries and reference books or they ask classmates or teachers about what they do not know.

Negotiation of meaning through dialogic interaction has proved to be crucial in order to acquire knowledge from the constructivist perspective held by CLIL, since language serves a double purpose: as a vehicle between students and their thoughts (communicating) and as a means of dealing with cognitive conflict and restructuring cognitive structures (learning).

3. SUMMARY AND CONCLUSIONS

This paper started by pointing out three features involved in both the integrated curriculum and CLIL: integration of fields of knowledge, relevant cognitive associations and connection between life inside and outside school. These three elements have been used as a springboard to justify the presence of a theory of learning that gives shape to both educational components: constructivism.

The chapter has analysed three main components of constructivism relevant to this theoretical research: the learner's active construction of knowledge; cognitive conflict

and negotiation of meaning. Practitioners involved in implementing CLIL / integrated curriculum programmes should be aware that learners are active constructors of their knowledge by building correlations between areas of knowledge as well as between old and new information; that cognitive conflict allows students to reach a higher level of understanding and finally, that dialogue and negotiation among students do not only promote a higher competence at a linguistic level, but also at a cognitive one.

Tasks such as brainstorming, mind maps, note taking or flashcards presenting content may be introduced to link old and new information; observation sheets, experiments, hands-on or problem-solving activities in pairs or small groups may promote cognitive conflict while dictagloss, corrective feedback or correction discussion may draw students' attention to linguistic reflection. All in all, practitioners should have in mind the famous native American saying: "Tell me and I'll forget. Show me and I may not remember. Involve me and I'll understand."

NOTES

1. For the purposes of this chapter, these terms are considered synonyms.
2. As Pica (1994: 447) explains, components of negotiation have been given different names: 'clarification requests', 'comprehension checks', 'confirmation checks', 'strategies', 'tactics' and 'indicators'.

REFERENCES

- Abercrombie, M.L.J. 1979. *Aims and Techniques of Group Teaching*. Guildford: Society for Research into Higher Education.
- Coll, C., E. Martín, T. Mauri, M. Miras, J. Onrubia, I. Solé and A. Zabala. 1999. *El Constructivismo en el Aula*. Barcelona: Graó.
- Coonrod, D. and S. Hughes. 1994. "Using children's literature to promote the language development of minority students". *The Journal of Educational Issues of Language Minority Students*, 14: 319-332.
- Council of Europe. 2001. *Common European Framework of Reference for Languages: Learning, Teaching, Assessment*. Strasbourg.
- Cubero, R. 2005. *Perspectivas Constructivistas. La Intersección entre el Significado, la Interacción y el Discurso*. Barcelona: Graó.
- Donato, R. and R.M. Terry, eds. 1995. *Foreign Language Learning. The Journey of a Lifetime*. Lincolnwood, Illinois: National Textbook Company.
- Ellis, R., Y. Tanaka and A. Yamazaki, A. 1994. "Classroom interaction, comprehension, and the acquisition of L2 word meanings". *Language Learning*, 44/3: 449-491.
- Eurobarometer*. 2006. [Internet document available at http://ec.europa.eu/public_opinion/archives/ebs/ebs_243_sum_es.pdf]
- Feldman, R.S., ed. 1990. *The Social Psychology of Education. Current Research and Theory*. Cambridge: Cambridge University Press.

- Gass, S.M., A. Mackey and T. Pica. 1998. "The role of input and interaction in second language Acquisition". *The Modern Language Journal*, 82/3: 299-307.
- Genesee, F. 1994. "Integrating language and content: Lessons from immersion". *Educational Practice Reports, 11*. National Center for Research on Cultural Diversity and Second Language Learning. Washington, DC: Center for Applied Linguistics.
- Hertz-Lazarowitz, R. 1995. "Understanding interactive behaviors: Looking at six mirrors of the classroom". *Interaction in Cooperative Groups. The Theoretical Anatomy of Group Learning*. Eds. R. Hertz-Lazarowitz, and N. Miller. New York: Cambridge University Press. 71-101
- Hertz-Lazarowitz, R. and N. Miller, N., eds. 1995. *Interaction in Cooperative Groups. The Theoretical Anatomy of Group Learning*. New York: Cambridge University Press.
- Johnson, D. W., R.T. Johnson and K. A. Smith. 1990. "Academic conflict among students: Controversy and learning". *The Social Psychology of Education. Current Research and Theory*. Ed. Feldman. Cambridge: Cambridge University Press. 199-231
- Lake, K. 1994. "Integrated curriculum" [Internet document available at <http://www.nwrel.org/scpd/sirs/8/c016.html>]
- Lantolf, J.P. ed. 2000. *Sociocultural Theory and Second Language Learning*. Oxford: Oxford University Press.
- Lorenzo, F. et al., 2005. *Orientaciones para la Elaboración del Currículo Integrado de las Lenguas en los Centros Bilingües*. Sevilla: Consejería de Educación (Junta de Andalucía).
- Lynch, T. 1996. *Communication in the Language Classroom*. Oxford: Oxford University Press.
- Marsh, D. 2002. *Content and Language Integrated Learning: The European Dimension*. Jyväskylä, Finland: University of Jyväskylä Press.
- Marsh, D. 2003. *Using Languages to Speak and Learning to Use Languages*. Milan: IIRSE.
- Mc Cafferty, S.G. 1992. "The use of private speech by adult second language learners: A cross-cultural study". *The Modern Language Journal*, 76/2: 179-189.
- Mc Cafferty, S. G. 1994. "Adult second language learners' use of private speech: A review of studies". *The Modern Language Journal*, 78/4: 421-436.
- Mc Kinley, J. 1983. "Training for effective collaborative learning". *Helping Adults Learn. How to Learn. New Directions for Continuing Education*. Ed. Smith, R. M. San Francisco, CA: Jossey-Bass Inc., Publishers. 13-22.
- Met, M. 1999. *Content-Based Instruction: Defining Terms, Making Decisions*. Washington, DC: The National Foreign Language Center.
- Onrubia, J. 1999. "Enseñar: Crear zonas de desarrollo próximo e intervenir en ellas". *El Constructivismo en el Aula*. Eds. C. Coll, E. Martín, T. Mauri, M. Miras, J. Onrubia, I. Solé and A. Zabala. Barcelona: Graó. 101-124.

- Oxford, R.L. 1997. "Cooperative learning, collaborative learning, and interaction: Three communicative strands in the language classroom". *The Modern Language Journal*, 81/4: 443-456.
- Pica, T. 1994. "Research on negotiation: what does it reveal about second-language learning conditions, processes, and outcomes?". *Language Learning*, 44/3: 493-527.
- Shoemaker, B. J. E. 1989. "Integrative Education. A Curriculum for the Twenty-First Century". *OSSC Bulletin* 33, 2. Eugene, Oregon: Oregon School Study Council.
- Skehan, P. 1998. "Task-based instruction". *Annual Review of Applied Linguistics*, 18: 298-286.
- Slavin, R.E. 1995. "When and why does cooperative learning increase achievement? Theoretical and empirical perspectives". *Interaction in Cooperative Groups. The Theoretical Anatomy of Group Learning*. Eds. R. Hertz-Lazarowitz, and N. Miller New York: Cambridge University Press. 145-173.
- Smith, R. M, ed. 1983. *Helping Adults Learn. How to Learn. New Directions for Continuing Education*. San Francisco, CA: Jossey-Bass Inc., Publishers.
- Swain, M. 2000. "The output hypothesis and beyond: mediating acquisition through collaborative dialogue". *Sociocultural Theory and Second Language Learning*. Ed. J. P. Lantolf. Oxford: Oxford University Press. 97-114.
- Tjosvold, D. and D. W. Johnson. 1977. "Effects of controversy on cognitive perspective taking". *Journal of Educational Psychology*, 69/6: 679-685.
- Vygotsky, L.S. 1978. *Mind in Society. The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.
- Vygotsky, L.S. (1992) *Thought and Language*. Cambridge, MA: MIT Press.
- Webb, N.M. 1989. "Peer interaction and learning in small groups". *International Journal of Educational Research*, 13/1: 21-39.
- Webb, N. M. 1995. "Testing a theoretical model of student interaction and learning in small Groups". *Interaction in Cooperative Groups. The Theoretical Anatomy of Group Learning*. Eds R. Hertz-Lazarowitz and N. Miller New York: Cambridge University Press. 102-119.