Argumentation and Education
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Theoretical Foundations and Practices
Contents

Introduction ......................................................................................................................... 1
Nathalie Muller Mirza and Anne-Nelly Perret-Clermont

Part I Theoretical Foundations

Argumentation as an Object of Interest and as a Social and Cultural Resource ........................................................ 9
Eddo Rigotti and Sara Greco Morasso

Psychosocial Processes in Argumentation ................................................................. 67
Nathalie Muller Mirza, Anne-Nelly Perret-Clermont, Valérie Tartas, and Antonio Iannaccone

Argumentation and Learning .................................................................................... 91
Baruch B. Schwarz

Argumentative Interactions and the Social Construction of Knowledge .................. 127
Michael Baker

Argumentative Design ............................................................................................... 145
Jerry E.B. Andriessen and Baruch B. Schwarz

Part II Practices

Developing Argumentation: Lessons Learned in the Primary School ...................... 177
Neil Mercer

Argumentation in Higher Education: Examples of Actual Practices with Argumentation Tools ........................................ 195
Jerry E.B. Andriessen
<table>
<thead>
<tr>
<th>Contents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The Argumentum Experience</td>
<td>215</td>
</tr>
<tr>
<td>Sara Greco Morasso</td>
<td></td>
</tr>
<tr>
<td>Author Index</td>
<td>237</td>
</tr>
<tr>
<td>Subject Index</td>
<td>241</td>
</tr>
</tbody>
</table>
The Authors

Jerry E.B. Andriessen is an independent researcher and consultant in technology enhanced collaborative learning (the Netherlands).

Michael Baker is a research director of the CNRS (Paris). He is presently a member of the LTCI laboratory at Telecom ParisTech engineering school, where he works on usages of ICT.

Sara Greco Morasso is a member of the Institute of Linguistics and Semiotics at the University of Lugano (Switzerland), and the coordinator of the Swiss Virtual Campus project Argumentum (http://www.argumentum.ch).

Antonio Iannaccone is professor of educational psychology and social psychology at the University of Salerno (Italy).

Neil Mercer is professor of education at the University of Cambridge (UK).

Nathalie Muller Mirza is associated professor (Maître-assistante) in psychology at the University of Lausanne (Switzerland).

Anne-Nelly Perret-Clermont is professor of psychology and education at the University of Neuchâtel (Switzerland).

Eddo Rigotti is professor of argumentation and verbal communication at the Faculty of Communication Sciences of the University of Lugano (Switzerland).

Baruch B. Schwarz is professor of education at the Hebrew University of Jerusalem (Israël).

Valérie Tartas is lecturer and researcher (Maître de conférence) in developmental psychology within the Cognition, Communication and Development Laboratory at the University of Toulouse 2 (France).
Introduction

Nathalie Muller Mirza and Anne-Nelly Perret-Clermont

Argumentation constitutes an important dimension of daily life and of professional activities. It also plays a special role in democracies and is at the heart of philosophical reasoning and scientific inquiry. Argumentation has an increasing importance in education, not only because it is an important competence that has to be learned, but also because argumentation can be used to foster learning in philosophy, history, sciences and mathematics, and in many other domains. During the last decade, argumentation has attracted growing attention as a linguistic, logical, dialogical, and psychological process that sustains or provokes reasoning and learning.

As a means of improving students’ understanding in the classroom, argumentation can be called upon to trigger learning in many ways. Argumentative practices involve making explicit and public one’s own stance and justifying it to another person or to oneself. Argumentation allows for explorative, critical and enquiring approaches to reality: encouraged to test the validity of each other’s ideas, the learners are led to formulate objections and counter-objections and to understand a multiplicity of positions. Argumentative practices in science education are interesting because they invite pupils to use and come to understand rules of reasoning that are used in scientific work: pupils search for reasons, examine the available data, test alternative hypotheses, etc., which allows them to discover that science is more about trying to construct and resolve problems in specific theoretical frames than a matter of “discovering” things that might have been hidden since the beginning of the world. This is in contrast with students and laypersons’ preconceptions. It implies that confrontation of perspectives is “fair-play” and that submitting to majority world views, prejudices, or status does not contribute to knowledge construction. Argumentative practices are powerful resources to deal with cognitive contradictions, doubts, controversies, complex decisions, etc. They invite participants to engage both in reasoning and in search of information. They require participants to coordinate their actions and reflections and to experiment with a reflexive position that enhances decentration.

N. Muller Mirza (✉) and A.-N. Perret-Clermont
Department of Psychology, Faculty of Political and Social Sciences,
University of Lausanne, Lausanne, Switzerland
e-mail: Nathalie.MullerMirza@unil.ch
capacities. Because learning does not solely mean acquisition of information or the appropriation of ready-made objects of knowledge, argumentation also entails the emergence of new understandings and the creative restructuring of previous ones: the learner is the co-author of a constructive socio-cognitive process in which argumentation holds important functions.

Argumentation is thus of interest to researchers and practitioners in education who are concerned with the social and cognitive processes that promote learning. However, learning argumentation and learning by arguing raises theoretical and methodological questions: How and when do learning processes develop in argumentation? Is it the case for all subjects? How does one design effective argumentative activities? How can the argumentative efforts of pupils be sustained? What are the psychological issues involved when arguing with others? How can what the learners produce be analyzed and evaluated? The argumentative activity requires specific intellectual and social skills and it is often emotional and demanding. Introducing argumentative activities in educational settings is not yet common. It requires attention at different levels. The complex argumentation skills must be given opportunities to develop in the growing child. At the interpersonal level, argumentation means confronting other people’s perspectives. People often avoid these kinds of situations, which they tend to perceive as a risk to the self and to the relationship. At the institutional level, argumentative activities are sometimes considered time consuming when curricula are already overloaded. These activities require special social skills from the teachers, as well as ad hoc teacher training and assessment practices. At the cultural level, argumentation means the acceptance that social harmony is not threatened by the expression of a plurality of opinions; that assertions have to be backed up; that authority is not sufficient; and that discussions are permitted even when relationships are asymmetrical.

As a result of this complexity, it is not possible for teachers to just improvise argumentation based learning activities in the classroom. Precise design and adaptive management are needed. This book offers perspectives on these issues in an interdisciplinary effort to develop original theoretical and methodological perspectives using results from empirical research. The authors, active in the fields of theory of argumentation, psychology, and education, provide here elements to understand what happens when argumentation is introduced into the classroom. They share a common perspective on argumentation with special attention paid to communication and context. They also share a common understanding of education as oriented toward the enhancement of individual and collective agency in the development of knowledge, sociability and democratic social responsibility.

The book is organized into two main parts: theoretical foundations and research results are presented in the first part and an examination of existing innovative practices and lessons learned from them constitutes the second part.

The development of argumentation theories in the contemporary epistemological scene is central to the chapter “Argumentation as a social and cultural resource” by Eddo Rigotti and Sara Greco Morasso. They consider, in particular, the pragma-dialectical approach for its focus on the theoretical kernel of the discipline and for systematically eliciting, from this, the connected methodological implications.
The key notion of argument is specified by comparing it to the apparently near notion of demonstrative proof. Analogies and differences are brought to light, and the rather fuzzy but challenging and fundamental notion of *reasonableness* is identified as denoting the main value at stake in argumentative interactions. The authors propose a model of argumentative intervention in which argumentation is conceived as a particular type of communicative interaction. The model aims both at producing and at analyzing/evaluating argumentative interventions. The fundamental claim is that assuring the quality of argumentation implies contributing to a healthy social consensus and promoting cultural development at the individual and collective levels.

The chapter, “Psychosocial processes in argumentation,” by Nathalie Muller Mirza, Anne-Nelly Perret-Clermont and colleagues, examines argumentation as a psychosocial practice embedded in institutional, historical and cultural contexts. Argumentation occurs when the conversation flow is disrupted by a disagreement, a question, or an alternative hypothesis. It is not easy to develop this peculiar communication, as it entails complex issues at the personal and interpersonal levels. Even though they are in reality interwoven, several dimensions are distinguished. At the cognitive and individual level, the questions include the following: what are the cognitive prerequisites for engaging in an argumentative interaction? How is the development of argumentative skills taking place in children? Beyond the individual level the authors take into consideration other dimensions that are important, such as the relational and dialogical aspects of argumentation, the status of the partners, and the characteristic of the “audience.” The specific demands of the institutional and cultural context in which argumentation takes place are also examined. Developmental, social, and socio-cultural approaches in psychology are thus convened in order to construct a better understanding of this complex practice.

Baruch Schwarz’s chapter provides multiple perspectives on the intricate relationship between argumentation and learning. Different approaches to learning impinge on the way argumentation is conceived: as a powerful vehicle for reaching shared understanding, as a set of skills pertaining to critical reasoning, or as a tool for social positioning. Each perspective has harvested empirical studies that have stressed the importance of argumentation in learning. In spite of the pluralistic stance adopted, this chapter attempts to draw connections between the findings obtained in the different perspectives. In a separate part, it considers the specific role of argumentation in the learning processes and outcomes for four subject areas: in mathematics, studies are presented that show deep gaps between argumentation and proof; in science, experimental studies are reviewed to examine whether and how argumentation promotes conceptual change; in history, the chapter considers the role of argumentation in challenging narratives and in claiming a position; and lastly, the chapter describes the new wave that characterizes civic education programs toward the instillation of argumentative practices in democratic citizenship.

Under the title “Argumentation and the social construction of knowledge,” Michael Baker deals with two questions: firstly, what might students learn by engaging in argumentative interactions? And secondly, by what cognitive-interactive processes might they achieve this? An approach to understanding argumentative interactions, produced in problem-solving situations, is outlined and shows them
essentially as attempts to solve an interlocutionary problem, i.e., that of deciding which putative problem solutions to accept or not, by drawing on additional knowledge sources (termed “[counter] arguments”) that potentially change the degrees of the acceptability of solutions. This process goes hand in hand with the exploration of a dialogical space and with the negotiation of the meaning of key notions underlying the debate. The analysis of an example of argumentative interaction, involving two adolescent students in a physics classroom, reveals this exploratory process, together with the essentially unstable nature of students’ viewpoints, given that they are engaging in argumentation with respect to ideas that are still under co-construction.

Baruch Schwarz and Jerry Andriessen, in their common chapter “Argumentative design,” discuss the educational architecture of argumentative activities. Productive argumentative activity may be encouraged, for example, by elicitation procedures, with argumentative scripts, by confronting subjects with hypothesis testing, and by pairing peers that have differences of opinion. What are the main results that research has delivered in such cases? A second section of the chapter is devoted to the designed use of collaborative technology for fostering and representing argumentation. Experiments using scenarios which feature a blend of technology and human interaction are discussed.

Beginning the second part of the book, Neil Mercer’s chapter, “Developing argumentation: lessons learned in the primary school,” argues three main points: first, that one of the most important aims of education ought to be to develop children’s capability for argumentation; secondly, that teachers can make a significant contribution to this development; and thirdly, that the development of children’s use of language as a tool for argumentation helps the development of their individual intellectual capabilities. To do so, Neil Mercer first discusses the importance of children’s engagement in dialogue for the development of their thinking and understanding. He then considers education as a dialogic process in which both the talk between teachers and learners and the talk among learners have important roles to play. Finally, he describes some classroom-based research which has enabled teachers to encourage the development of children’s use of spoken language for thinking and arguing effectively together, and which has also provided empirical support for the relationship among thought, language, and social activity, as claimed by the Russian psychologist Lev Vygotsky.

The practice oriented contribution, “Argumentation in higher education,” by Jerry Andriessen presents one case of using interactive media for supporting collaborative argumentation by university students. The discussion is descriptive, focusing on the scenario and the tools that are used and on examples of actual discussions by students. Some basic mechanisms of employing argumentation are illustrated by students using computer tools (chat, forums, graphical tools) for producing an argumentative essay. This chapter shows some of the characteristic constraints that are involved in implementing argumentative learning in university practice.

How can argumentation skills be improved by engaging students in argumentative practices where they are helped to assume a healthy critical attitude and provide reasons for their positions? What are the synergies of learning to argue and arguing to learn? “The Argumentum experience” by Sara Greco Morasso, originates from
these questions and relies on the experience of teaching argumentation at university level in the framework of the Swiss Virtual Campus project Argumentum (http://www.argumentum.ch). After presenting the aim and structure of Argumentum, this study focuses on a specific experience of argument production and analysis that occurred in the pedagogical scenario of argumentation classes at the master’s level. Finally, the chapter elaborates on the lessons learned from this experience.

By drawing upon existing theoretical and empirical resources to discuss the successes and difficulties encountered in trying to introduce or sustain argumentative activities in learning settings, the authors of this book hope to contribute to the promotion of a large program of research. In their opinions, considering argumentation as a key activity at the heart of many developmental processes, in individuals and in society, opens the way to a deeper reconsideration of teacher training, curricula, and also of the nature of human knowledge and its potential advancements.
Part I
Theoretical Foundations
Argumentation as an Object of Interest and as a Social and Cultural Resource

Eddo Rigotti and Sara Greco Morasso

Abstract The development of argumentation theories in the contemporary epistemological space is shortly outlined and the pragma-dialectical approach is, in particular, considered for its focus on the theoretical kernel of the discipline and for systematically eliciting, from this, the connected methodological implications. The key notion of argument is specified by comparing it to the apparently near notion of demonstrative proof. Analogies (discursiveness, inferentiality, procedurality, critical approach) and differences (things that could also be in a different way, pragmaticity, use of ordinary language, implicitness) are brought to light, and the rather fuzzy but challenging and fundamental notion of reasonableness is identified as denoting the main value at stake in argumentative interactions. The authors propose a model of argumentative intervention in which argumentation is conceived as a particular type of communicative interaction. The model aims both at producing and at analyzing/evaluating argumentative interventions. Three core aspects of the argumentative intervention are highlighted in the model: the social context of communicative interaction, both in its institutionalized and in its interpersonal components, which is seen as the environment of argumentative activities; the inferential structure of argumentation, in its dialectical and relational components; and the quality of argumentation (distinguishing sound and manipulative argumentative moves). The fundamental claim is that assuring the quality of argumentation implies contributing to a healthy social consensus and promoting cultural development, at the individual and collective levels.

Keywords Argumentation, Reasonableness, Argumentation studies, Argument schemes, Loci, Argumentum Model of Topics, Manipulative processes

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E. Rigotti (✉) and S. Greco Morasso
Faculty of Communication Sciences, University of Lugano, Lugano, Switzerland
e-mail: rigottie@lu.unisi.ch
1 Argument: In Search for the Hidden Meaning of the Word

The Latin word *argumentum* covers a fundamental notion of Argumentation theory. This word, which is immediately recalled by equivalent terms in many modern languages (English *argument*, Italian *argomento*, French *argument*, German *Argument*, Russian *argument*), is a noun derived from the verb *arguo*. We find in its lexical structure the key to its semantic content; thus, analyzing the way it is built constitutes a significant help to approaching our subject. The word is formed by the verb *arguo* and by the suffix – *mentum*. Now, the Latin suffix – *mentum*, bound to a verb, refers, in general, to the process of realisation of the action which the verb represents, indicating, in particular, the way and the means or instruments with which the action is realized. One should think of examples such as *documentum* (a device used to inform), *monumentum* (a device used to remember), *adiumentum* (a device used to help), *alimentum* (a means used to nourish). In the same way, the word *argumentum* can be understood as “a device to *arguere*.”

The Latin verb *arguo* has entered numerous modern languages (English *to argue*, Italian *arguire*, French *arguer*), changing its values perceptively. Nevertheless, it has kept one fundamental meaning, that of *pointing out*, of *bringing to acknowledge* and, therefore, also of *proving*. In other words, it basically seems to indicate the process of “helping” the interlocutor recognize something by (directly or indirectly) giving him the necessary justification. In this respect, we have a particularly interesting case, when the meaning of “showing something” is used as “demonstrating the guilt of” or simply *accusing*. In this case, the focus is on an aggressive and polemic implication, which is not infrequent in argumentation: thus the Latin words *argumentor* and *argumentatio* incorporate the value of discussing, debating polemically. This meaning is entirely expressed by the English verb *to argue*, which is often used in the sense of “*discussing heatedly*” and even as synonym of *to quarrel*.

In the noun *argumentum* anyway, the fundamental value of *reason*, *evidence* and *proof* prevails, although other values are not completely absent.\(^2\)

The fundamental value of *arguere*, as “to bring to recognize” the reasonableness (i.e. the grounds) of a standpoint, was already established in the ancient rhetoric. Cicero’s definition of *argument* is the following (Cic. Top. 2, 7, see Reinhardt 2003):

ARGUMENTUM EST RATIO, QUÆ REI DUBIAE FACTI FIDEM

Here the argument is seen as a procedure demonstrating the credibility of an uncertain statement which needs to be proved. Therefore, the argument rests on something that is already established in order to demonstrate the truth of a still uncertain hypothesis (Quint. 5, 10, 11, see Winterbottom 1970).

ARGUMENTUM EST RATIO PROBATIONEM PRAESTANS, QUÆ COLLIGITUR ALIQUID PER ALIUD, ET QUÆ, QUOD EST DUBIUM, PER ID QUOD DUBIUM NON EST, CONFIRMAT.

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\(^2\)Since the argument is considered to be the central and substantial element of the discourse, the element on which the whole discourse is based, in the case of narrative texts, “argument” is used to indicate the story, understood as the kernel of a narrative text.