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The object of learning in action research and learning study

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ABSTRACT

The Learning study and the Educational Action Research approaches to educational research are compared, not from a third, neutral point of view, but from the perspective of the former. Hence, the comparison is carried out in terms of how the main point of departure of the Learning study (LS), the question of 'What is to be learned?', is addressed in the two approaches. Both represent critical stances to Educational objectives, the frequently taken-for-granted answer to the question. Educational objectives communicate, however, what the students are expected to become able to do, but not what they need to learn in order to get there. Hence, what is to be learned cannot be stated in advance, prior to the teacher learning what her students need to learn. The two approaches to educational research agree on the principle that what is to be learned has to be found in the interaction between students and teachers; however, there is an important difference between the two concerning the very point of departure. Educational objectives are too wide and imprecise according to LS, the teachers have to find the critical aspects (necessary to appropriate, but not appropriated as yet by the students) of the object of learning. According to Action research, as formulated by Lawrence Stenhouse, educational objectives are too narrow, too limited and limiting. We shall start looking for what is to be learned amongst inherent aspects of the content itself.

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This special issue is about comparing three approaches to educational research and teachers' professional development: lesson study, learning study (LS) and action research. Our article is about a comparison between the latter two and – in order to make the comparison more precise – is limited to the form of action research developed first at the University of East Anglia by Lawrence Stenhouse, John Elliott and others. This comparison is not carried out from a third, neutral point of view. We are looking at both approaches from the point of view of one of them, the LS. To begin with, according to the variation theory of learning, which has been used as the theoretical foundation for most learning studies, it is the object of learning, the answer to the question 'What is to be learned?' that has to be the point of departure for studies aiming at improving learning in pedagogical contexts. As we are making a comparison in terms of how this very question is addressed, the comparison may not be entirely fair.

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Action research is of many different kinds, with various similarities and differences between them, although all of the different kinds have at least one thing in common: they are about educational changes and unlike other kinds of research about educational changes, in which the researcher and the practitioner are different persons, in action research, the researcher and the practitioner are the same person. If action research is defined in such terms, LS is action research. But, we want to explore action research and LS further. If we assume that both involve the study of changes, we would like to know how the nature and dynamics of change are characterized in the two cases. We thus juxtapose LS with the particular kind of action research mentioned previously and compare two ways of answering the question ‘What is being learned?’ and ‘How is it learned?’ (Marton 2015). In educational contexts, these two questions are usually preceded by the question ‘What is to be learned?’, the point of departure of LS, and the point of departure of the comparison carried out in this article.

The question ‘What is to be learned?’ is usually answered in terms of educational objectives. Educational objectives are probably the most widely spread conceptual artefacts that educational research has produced. Both action research and LS are highly critical of educational objectives, but they present different alternatives.

Our discussion builds on a LS carried out in Hong Kong a few years ago (Cheung and Chan 2015). It addressed the problem ‘How can we contribute to the enhancement of year five students’ ability to structure argumentation’ and represents the LS approach in this article.

As the immediate context of the study is what we here refer to as the Hong Kong model of teachers’ collegial learning, characterization of some of the main attributes of this model precedes the brief account of the study, which is followed by focusing on a remarkable potential convergence between two answers to the question ‘What is to be learned?’, one derived from the theory that was made use of in the LS mentioned previously, and the other derived from one of the classics of action research, *Introduction to curriculum research and development*, by (Stenhouse 1975).

The Hong Kong model for the betterment of learning

Teachers’ professional development was not a main focus of attention in Hong Kong before 2000. The Curriculum Reform launched in 2001 meant, however, a radical change in this respect. Teachers’ professional development was seen as a major instrument and a necessary condition for the reform, and the Hong Kong Education Bureau supported school-based curriculum development as part of the reform (Curriculum Development Council (CDC) 2001, Bereiter 2002). The Curriculum Development Council (CDC) promoted a new culture of collegial learning. In addition to the provision of a ‘one-shot’ model of professional development where teachers attended short-term courses and seminars, the Education Bureau advocated multiple and diversified modes to provide teachers with continuous and interactive support.

Given this emphasis, schools were advised to develop strategic plans for professional development of teachers, promote and facilitate collaborative lesson preparation, and support and use collaborative action research as a strategy for inquiry and reflection (Figure 1, Curriculum Development Council 2002). John Elliott was invited to be actively engaged as a consultant to the Hong Kong Government on the strategic development of its

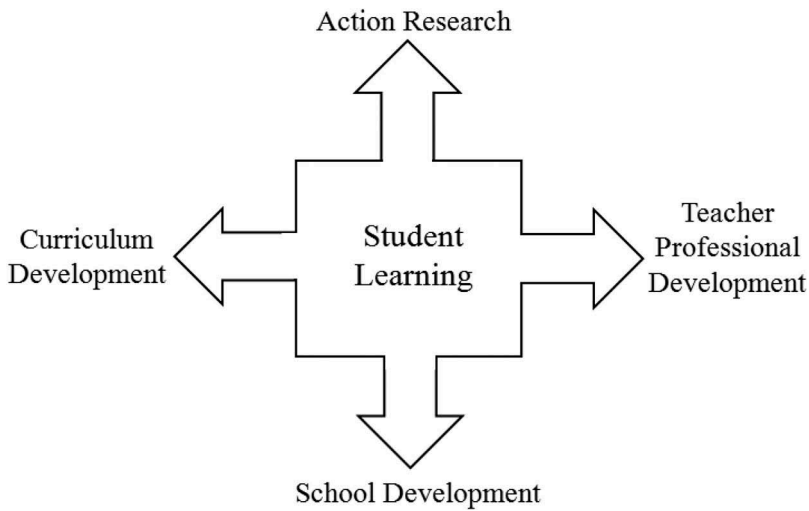


Figure 1. Using collaborative lesson preparation as a starting point, action research is integrated into the collaborative cycle of lesson preparation for teacher professional development, curriculum development and school development (adapted from Curriculum Development Council 2002).

curriculum reform proposals and in developing the theory and practice of action research in the context of curriculum and teacher development. To promote this new culture of learning, external facilitators, named 'curriculum developers', were expected to bring in new ideas and experiences to make teachers more ready for curriculum and school improvement in their own school context. The Education Bureau made large investments in school-based professional development anchored in the work of curriculum developers. These were exemplary teachers with instructional expertise in specific key learning areas working under the school-based support programmes of the Education Bureau or university-partnership schemes funded by the Education Development Fund. They were sent to schools to provide intensive on-site support for professional development of teachers to improve the curriculum. As 'knowledgeable others' for the teachers, they provided support services through partnership with schools. The value of this collaboration between curriculum developers and teachers pertaining to the development of teacher professional experience and school-based curriculum is recognized (Curriculum Development Council 2002). The group of teachers and the external facilitator discussed issues related to students' learning, such as students' learning difficulties, expected learning outcomes, the planning and designing of the teaching, and the reflection on the teaching experience and students' learning outcomes with respect to lesson observation and different forms of students' learning evidence (Chiu et al. 2013). Through active observation, inquiry, and discussion with one another in collaborative action research, the role of teachers has evolved from teaching to an interlinked teaching-researching-learning, thus forming effective communities of teachers as learners. Curriculum developers in Hong Kong linked together schools, universities and the Curriculum Development Bureau. The effectiveness of this strategy could be shown in Cheung's (2009b). A total of 617 teachers from 147 primary schools who participated in the collaborative lesson preparation and action research (mean = 1.7 years) throughout Hong Kong completed a survey questionnaire. This survey showed that

teachers perceived the potential impact of professional development on teaching as very substantial and beneficial. The vast majority of respondents agreed that this strategy had a significant impact on teaching; in addition, it increased teacher professional knowledge (95.8%), improved the pedagogy and teaching strategies (95.5%), increased teachers' reflection on learning and teaching (94.4%) and increased the understanding of curriculum development (92.7%).

At the same time, according to Marton (2001) and Lo (2009), the first LS was carried out in 2000 in a project called *Catering for Individual Differences – Building on Variation (CID(v))* by Ference Marton, Mun Ling Lo and their colleagues in Hong Kong. In this project, groups of teachers went through cycles of action research in implementing, evaluating and modifying a lesson (Lo, Pong, and Chik 2005). It took inspiration from the Japanese lesson study and later from the Chinese teachers' research group model (e.g., Ma 1999). It derived its conceptual framework from phenomenography and variation theory (Marton and Booth 1997). It was found that LS further developed variation theory by its use in actual classrooms, allowing a deep understanding of and theoretical insights into its application in practice (Lo 2009). A group of teachers of the same subject, teaching the same grade, and curriculum developers from universities or the Education Bureau formed the LS team. The team wanted to find out what was necessary for the students to learn in order to achieve given educational objectives. Each LS aimed at helping the students to appropriate an intended object of learning in a lesson. Teachers worked collaboratively to design the most appropriate pattern of variation and invariance (between examples, tasks, illustrations, etc.) to enhance the opportunity for students to discern the critical aspects of a specific object of learning. The teacher carrying out the lesson systematically attempted to vary certain aspects and keep other aspects constant to help students discern new aspects of a certain object or new meanings. Teachers were encouraged to observe the research lessons taught by other members of the team. The videotape of the lesson was carefully analysed by the curriculum developer using variation theory. Teachers also engaged in professional dialogue in post-lesson conferences. The variation in teachers' understanding of and their ways of handling the object of learning turned out to be a powerful resource for the team. Lo (2009) mentioned that the LS process serves as a platform for enhancing learning amongst students, teachers and researchers. A LS comprises 2–4 cycles and the enacted object of learning differs to a greater or lesser extent from cycle to cycle. Variation helped teachers to discern the relations between teaching and learning and make improvements. Teachers were provided with sustained, supported, hands-on experience of inquiry into their own teaching, which was conducive to developing their understanding of teaching and learning and helping them to discover students' learning difficulties.

We can thus conclude that by being used more or less at the same time, in the same place, with the aim of movement in the same direction, action research and LS came very close to each other right after the turn of the millennium in Hong Kong.

In the next section, we will present a LS which we will use as the main example in our article. It was carried out in a primary school located in the eastern part of Hong Kong Island, called North Point. The teachers' interest in LS originated from a school-based curriculum development project initiated by the Hong Kong Education Bureau in 2001–2005. Each year, a small group of Chinese language teachers from the same grade worked with a curriculum developer from the Education Bureau to conduct collaborative action research in the earlier stage of collaboration with the aim of developing an effective school-based Chinese

curriculum. For example, one of the teachers participating in the LS, described in the next section (and there referred to as 'Teacher B') joined the action research group in 2001 and used the integrative perceptual approach (related to phenomenography and variation theory) (Tse et al. 2007) to improve Chinese character learning. In the early stages of his professional development, he mainly tried to work with other teachers and the curriculum developer to employ progressive teaching strategies. The teachers then decided to conduct a LS with the curriculum developer in the later stage of collaboration aiming at developing students' language capabilities by handling the lessons in more powerful ways. When the curriculum developer joined the university in 2006, several teachers continued to work with her in a LS group because they found the collegial learning in LS rewarding both professionally and personally. They also participated in international collaborative research under the Swedish-Asian Links programme titled 'The same theoretical approach in two different cultures (2008–2011)', which is a research project that compared the enactment of the same lesson in two different cultures – Hong Kong and Sweden (for details of the project, see Holmqvist, Holmquist, and Cheung 2010). In the study, the two teachers from Hong Kong participated in a LS to improve fourth grade students' reading comprehension. The results of the LS inspired the second cycle of the LS amongst Swedish teachers (Cheung 2009a; Cheung and Cheng 2009; Holmqvist, Holmquist, and Cheung 2010).

The learning study 'How can we contribute to the enhancement of year 5 students' argumentative structuring ability?'

A LS is usually carried out in a sequence of cycles. The study that we are using as our main example and which we mentioned in the previous section was carried out in two cycles, both doubled (See Figure 2 for an overview of the two cycles.). Two year five classes (A1 and B1) participated in the first cycle and a year later two other, but similar year five classes (A2 and B2) participated in Cycle 2. The same two teachers (Teacher A and Teacher B) taught both cycles. The two teachers formed the LS group together with two curriculum developers/researchers. The study was about writing argumentative texts and becoming better at it by means of becoming better at structuring. 'Argumentative texts' and 'structuring' refer in this case to the object of learning in terms of what (topic) is to be appropriated. The thing is that students on this level are primarily used to texts of the narrative kind, especially as far as literacy is concerned. The LS group assumed from the beginning that as the main difference between narrative and informational texts, in addition to content, has to do with the structure of the texts; it is primarily the structure that the students have to learn about. The group made use of three texts related to traditional Chinese culture, from a local textbook, as examples of informational texts. By relying on their experience as teachers and on the discussion with their colleagues, the members of the LS group addressed the question 'What is to be learned?' and arrived at an answer in terms of the following three educational objectives:

- (a) to produce an interesting and attractive opening to an argumentation to establish aims and standpoint;
- (b) to structure an argumentation by introducing main arguments supported by subordinate arguments and

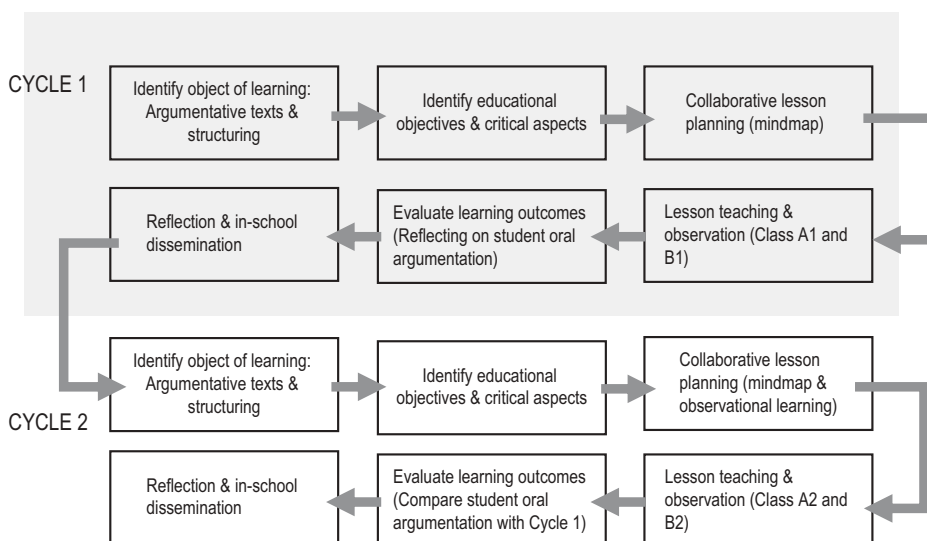


Figure 2. Overview of the two cycles of the LS example.

(c) to conclude an argumentation by summarizing stances.

Note that these objectives greatly differed from the teaching objectives suggested by the textbook publisher (see [Box 1](#)), which would have been guided the teaching if the LS had not taken place.

By looking at the reflection of the teacher in class A on handling the argumentative structuring module, we can understand more clearly how the abilities of the students to discern the necessary aspects of argumentative structuring were developed:

The collaborative lesson preparation and peer lesson observation in the learning study helped me to become clearer in terms of the teaching goals of the argumentative structuring module. I began to be more focused on developing the capabilities of our students which the textbook did not specify. I would no longer fall into the trap of merely spending most of my lessons explaining the very difficult terminology in these informational texts like “green tea”, “black tea”, “scented tea”, “oolong tea”, “white tea”, “brick tea”, “West Lake Longjing”, “Lake Taihu Biluochun”, and “Lushan Cloud”. Instead, I tried to analyze the text “Tea Talk” with a mind-map (see [Figure 3](#)) to look at the part-whole relationships. This was because the curriculum developer reminded us to discern what is supposed to be learned from these difficult words. We then discovered that giving a number of examples in the text was to illustrate the topic sentence of this paragraph which was the main argument. By providing these examples, this was a skill to structure an argumentation with two subordinate arguments.

Box 1. Teaching objectives suggested by the textbook publisher.

- (a) Learn the language features of argumentative texts through reading texts about traditional Chinese eating cultures, and reflect on the pros and cons of features of traditional Chinese culture;
- (b) Develop the content for argumentation with students’ life experience and background knowledge;
- (c) Make an outline, and develop paragraphs to elicit the main points and
- (d) Learn the argumentative skills: make use of examples, data and quotes.

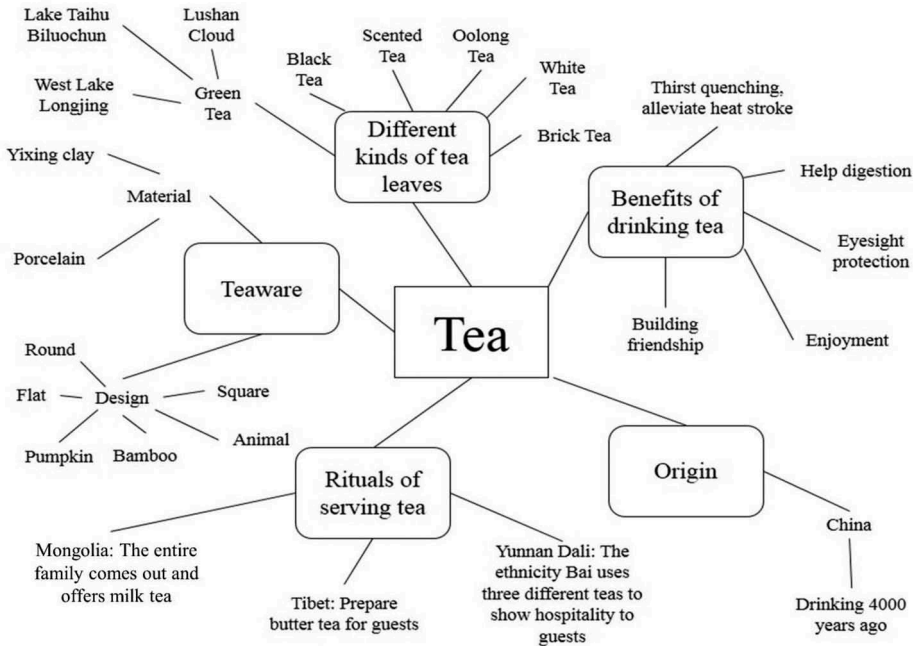


Figure 3. Mind-map constructed by teacher in class A to organize the critical features involved in the informational text 'Tea Talk'.

Now, the three texts were used to demonstrate how the agreed-upon criteria (the three educational objectives) could be matched. The teachers then tried to show the students what an 'interesting and attractive opening' might be, for instance, by demonstrating examples from the three different texts (e.g., direct opening, using riddles and questions). Similarly, the teachers showed examples of how different subordinate arguments relate to the overall idea in the text to get the students to understand the concept of 'subordinate arguments'. This also involved using different examples of developing subordinate arguments, including the use of topic sentences, signposting, listing examples and data. This seems a reasonable thing to do, but does it really work? Let us assume that being clear about what an interesting and attractive beginning of an argumentative text is like is a necessary condition for being able to write a convincing argumentative text and that the same is true regarding understanding 'subordinate argument'. Let us also assume that neither of these two necessary conditions is present in the case of several students. This means that in order to achieve the particular educational objective, those students who have not mastered these necessary conditions will need to do so. In this example, these two critical aspects (i.e. necessary conditions for achieving an object of learning that have not yet been mastered by the student) are in fact an answer to the question 'What is to be learned?'. Learning studies build on – as a rule – and make use of the variation theory of learning, according to which aspects and features of the world around us are appropriated by means of being discerned or differentiated from other things that are encountered and experienced. In order to experience a feature, it must differ from at least one other feature. If we had only come across interesting beginnings of argumentative texts, we would not be able

to separate 'interesting' and 'beginning' and thus would not have the concept of 'interesting beginning'. In the same way, a student who has only come across linear equations would not have the concept 'linear equations', for the simple reason that – in the absence of alternatives – she could not separate the feature (linear) from what it is a feature of (equation). In order to be able to discern a certain feature, there must be other features which are values in the same dimension of variation (e.g., more or less interesting beginnings or linear, quadratic equations, etc.). We should notice that dimensions of variation and features in dimensions of variation might be more or less general (or more or less specific). An argumentative text may have (and frequently does have) hierarchical structure on several levels. As a rule, we can identify three parts of the text: introduction (superordinate to the rest of the text), the body of the argument and conclusion; but within the parts, we can identify paragraphs, as mentioned previously, the first sentence being superordinate to the rest. This is an example of levels within levels.

After the discussion about the three texts in Cycle 1 of the LS, the students formed groups of five to six, and each group was asked to use the information from one of the three texts to argue that the selected theme was most representative of the Chinese culture. The presentations were briefly discussed by teacher and students. After Cycle 1, the LS group of teachers and researchers analysed and reflected on the two lessons (held in class A1 and class B1) jointly. They identified that students were able to gather rich information, but were not quite capable of reflecting these efforts in their argumentation; particularly, in the opening and closing sections. As a result, the group jointly revised the object of learning to include students learning from other students. It was decided that the students in the second cycle would observe recordings of the group presentations from Cycle 1, in accordance with the theory of observational learning (Bandura 1997), emphasizing the importance of watching potential models in learning. One of the teachers (Teacher B) then referred to variation theory and called attention to the principle of enabling the learners to experience differing qualities relative to the object of learning. According to this principle, if starting an argumentative text with an interesting beginning is critical for being good at writing argumentative texts; for instance, the students have to become able to differentiate between more and less interesting beginnings. In order to do this, the students must encounter beginnings that are more interesting and less interesting (rather than encountering interesting beginnings only). This does not guarantee that learning will take place, of course, but makes it possible for it to happen. In the same way, the LS group of teachers and researchers discovered during Cycle 1 that the first sentence in each paragraph summarized the whole paragraph: the text was hierarchically structured. The meaning of hierarchical structuring was explained to the students with reference to different examples of hierarchical structuring (of the different texts used in Cycle 1). In Cycle 2, recordings of the students' presentations during Cycle 1 were used. In this case, some of the presentations were hierarchically structured, others were not. Again, according to variation theory, structuring is a critical aspect of writing argumentative text and hierarchic structuring is a feature in the 'structuring' dimension of variation. In the same way, 'opening' is a critical aspect (dimension of variation). A corresponding pattern of variation and invariance (e.g. 'opening' varies, 'content' is invariant) makes learning (in the sense of understanding) of the idea of hierarchical structuring of texts possible. Accordingly, an 'attractive opening' is a feature in the dimension of variation 'opening'

and variation in the dimension ‘opening’ makes it possible to discern that aspect and the feature ‘attractive opening’. According to variation theory, which is the theory most commonly used in LS, the question ‘What is to be learned?’ is preferably answered by means of critical aspects and critical features corresponding to particular patterns and elements of variation and invariance, experienced by the learners. Learning is then brought about (or at least made possible).

The teachers found that variation theory helped them to design and analyse the lesson in a more systematic way that could help other colleagues to improve. The teacher in class B reflected that:

When we found that the students had problems with the opening of argumentative compositions, we tried to use two good examples and a bad example to illustrate what the opening may look like. I found that students learned to write an “attractive opening” with ease because the contrast variation is a very powerful tool.

The outcomes (‘the lived object of learning’) of the two cycles were compared based on students’ group argumentation (and thus also on how the students in Cycle 2 presented and argued for a text of their choice). This involved a total of 122 Chinese fifth grade students (60 girls and 62 boys), aged between 10 and 12 years at the time of the LS. The 122 students formed groups of five to six students, making a total of 14 groups in each cycle. Each group presented one oral argumentation; hence, we adopted ‘groups’ as the unit of analysis of comparison between students learning in the two cycles. The argumentation was rated against an Argumentation Rating Scale adapted from Tse and Shum (2000) Writing Assessment Scale for Chinese Argumentative Texts. Two independent raters (agreement rate of 85%) rated six items on a 4-point Likert Scale with 1 = ‘Disagree’ and 4 = ‘Agree’. As presented in Table 1, the argumentation produced by students in Cycle 2 was significantly higher on three items that were aligned with the three intended educational objectives. These include Item 1: generating an interesting opening for argumentation, $t(26) = 2.80, p < .01$, Item 5: on organization and structure of the evidence and supporting argument, $t(26) = 3.03, p < .01$ and Item 6: on the appropriateness of conclusion of the argumentation, $t(26) = 2.89, p < .01$.

In order to interpret these differences between the outcomes of the two cycles, we have to consider the differences in what happened in both. There were two main differences between the two cycles. First, in the first cycle, the teacher and the students analysed and discussed three texts, whilst in the second cycle the teacher and the students analysed and discussed the texts together with the oral presentations by other

Table 1. Table showing the differences between argumentation by students in Cycles 1 and 2 ($n = 28$).

	Cycle 1 M (SD)	Cycle 2 M (SD)	$t(26)$	p
(1) Interesting opening of the text*	2.00 (.88)	2.79 (.58)	2.80	<.01
(2) Establishing a clear stance in the introduction	1.79 (.80)	2.14 (.66)	1.28	.21
(3) A topic sentence in each paragraph to formulate the argument	2.00 (.78)	2.50 (.94)	1.53	.14
(4) The sufficiency of persuasive arguments	1.79 (.58)	2.36 (1.01)	1.84	.08
(5) Organization and structure of the evidence and supporting arguments**	1.86 (.66)	2.71 (.83)	3.03	<.01
(6) Appropriateness of the concluding statements in the text**	1.93 (.83)	2.93 (1.00)	2.89	<.01

Note. * $p < .05$, ** $p < .01$. Group is used as the unit of analysis (The 122 students formed a total of 28 groups in Cycles 1 and 2).

students of the same age and background. The second difference between the two cycles was that in the first one, the texts discussed and analysed were of the same quality, whilst in the second cycle the quality of the oral presentations of the students in Cycle 1 (recordings observed by students in Cycle 2) varied considerably. According to Bandura's theory of observational learning (Bandura 1997), the former fact is most important; according to our own theory of variation, it is the latter that was a necessary condition for the difference between the outcomes between the two cycles. Further research is needed to choose between the two conjectures. In any case, this study shows that different theoretical resources can be combined within the framework of a LS.

The description of educational goals for powerful teaching that is suggested by LS takes its point of departure in educational objectives, developing into the identification of critical aspects (dimensions of variation) and critical features (points in dimensions of variation). The model of description in this case is derived from the variation theory of learning (Marton 2015). According to this, learning implies discerning and simultaneously focusing on necessary aspects and features of the object of learning. Aspects and features that are necessary but have not been discerned are said to be critical. According to variation theory, they are what is to be learned. Discerning a critical aspect amounts to opening up a dimension of variation. A critical feature is a value in a dimension of variation that the learner is supposed to become able to discern. To become aware of a dimension of variation and constitutive values therein, it is necessary for the learner to encounter a pattern of variation and invariance. In other words, even if we cannot predict that certain conditions will cause learning, we can specify necessary conditions that make the learning of something specific possible.

Beyond educational objectives

Taking our point of departure in the study, which we have just discussed briefly, let us now carry out the comparison that is the object of this article. We argued, to begin with, that there is something that all kinds of action research (and not just the particular kind that we are focusing on in this article) have in common and which separates them from all other research, where it is assumed that the object of research does not change by being investigated. In action research, however, the object of research is studied by means of being changed. And in research on learning as a function of teaching, this very change is the object of research.

The object of research is attempted change in all action research, and in other forms of research which might not be called 'action research', but which *are* action research, in the sense that they not only aim at gaining knowledge, but also at improving conditions, processes, products, solving problems, etc., such as is the case with, for instance, the 'new production of knowledge' (Gibbons et al. 1994), 'networked improvement communities' (Bryk, Gomez, and Grunow 2010), design research (Bereiter 2002; Kelly, Lesh, and Baek 2014), etc. This is also true of LS, which builds on lesson study and design research.

This is an important commonality between the two approaches to educational research that we are comparing here. In both approaches, a changing object of research is studied, but we want to go further and contrast how the changes to be achieved are characterized and how those changes are brought about according to the two approaches.

It may be the case that of all ideas that educational research has produced, it is the idea of educational objectives that has had the greatest impact on school systems (at least on the rhetoric of school systems). The basic idea is that learning is always the learning of something and both teachers and students shall have a reasonable understanding of what is to be learned. There are two sources of demand for the clarifications of goals: one derives from the need for curricula, the need for society to have a say about what the teachers are teaching in school; the other derives from pedagogy, the need for teachers to know what their students are supposed to learn in school. So, how can we find out what the students need to learn and how can we communicate it?

This was exactly the question that Ralph Tyler addressed about 70 years ago. He suggested that there are the following four ways in which educational goals might be specified:

- (1) In terms of content,
- (2) In terms of what the teacher does,
- (3) In terms of generalized patterns of behaviour that the students are expected to develop (e.g. to develop critical thinking),
- (4) In terms of what the students are expected to learn to do and in terms of the content that they are expected to become able to handle (e.g. 'To write clear and well-organized reports of social studies projects') (Tyler 1949).

The first alternative does not say what the students are supposed to do with the content, according to Tyler; as far as the second alternative is concerned, what the teachers do is not a goal as such. Looking at such a characterization does not enable us to judge the value of what is characterized.

The third alternative does not say what content the students are expected to become able to handle. Accordingly, Tyler chooses the fourth alternative, including both the content and what the students are expected to become able to do with the specific content (behaviour).

Educational objectives are supposed to communicate as clearly as possible what is to be learned in particular subjects on particular levels. The more the clarity, the better. Tyler speaks of *behavioural* objectives. Stenhouse (1975) thinks otherwise. He does not see the purpose of education being the homogenization of minds (as many students as possible being able to do the same things). The purpose of education is, according to him, is the liberation of minds: to enable the learners to deal with novel problems, in novel contexts, by novel means. Stenhouse does not believe that education should constrain learners thinking; instead, it should open up for more variation: '*Education...is successful to the extent that it makes the behavioral outcomes of the students unpredictable*' (Stenhouse 1975, 82). Obviously, Lawrence Stenhouse does not find the use of educational objectives (as behavioural objectives) an especially helpful idea. At the same time – as a curriculum theorist – he acknowledges the need to describe educational goals somehow. He refers to Tyler's four ways in which educational goals may be described, as mentioned earlier. In particular, Stenhouse points to the two ways that Tyler does not find useful at all: description of goals in terms of content and in terms of what the teachers do when they are teaching. Stenhouse argues that there are inherent aspects of knowledge; *what* the teacher is teaching may imply *how* it shall be taught.

Furthermore, the main aims of education are changes in the students, and the activities that the students participate in, with the guidance of the teachers, will hopefully bring about these changes. In other words, just as dealing with particular contents, such as 'deep structures of knowledge', for instance, may be considered worthwhile in itself, participation in certain activities, such as '...improving and refining the reflective capacities of children' (89), for instance, may also be considered worthwhile in itself.

This is the process model (James 2012), the alternative to educational objectives for the specification of the aims of education, suggested by action research. What it implies is that such goals cannot be pre-specified, but can be found by dealing with different contents and by engaging in different activities. This is an explorative, responsive approach: the goals are found in the interaction between teachers and students, between teachers and between students (Elliott 2015a, 2015b). The two questions, 'What is to be learned?' and 'How is it learned?' converge and become two aspects of the same whole.

Let us consider how the same issue is handled in LS! As was pointed out previously, variation theory is – as a rule – used as an important instrument, according to which it is the object of learning that is the answer to the question 'What is to be learned?' Furthermore, the object of learning can be described in three different ways, representing three levels of increasing precision: 1) content, 2) educational objectives, and 3) critical aspects and critical features. As pointed out earlier, Stenhouse (1975) argues that to some extent how a particular content shall be taught is inherent to the content. According to variation theory, however, how the object of learning shall be taught is relative to the content as well as relative to the learners. In consequence, the content as such is not a sufficient way of communicating what is to be learned. Stenhouse's version of action research is critical of the use of educational objectives. The reason is that educational objectives are considered to be too narrow. Variation theory is also critical of educational objectives, although the reason is that they are considered to be too wide; they are not sufficient for telling teachers (or students for that matter) what is to be learned, much less how it is to be learned. As seen from such a perspective, educational objectives may tell us – rather vaguely – what the student on a certain level of their studies is expected to be able to do, but not what is necessary for getting there. So, both approaches to educational research dealt with here and contrasted with each other need to come up with at least one alternative to educational objectives. Actually, they seem to converge on the same alternative. The answer to the question 'What is to be learned?' cannot be given from the beginning; it has to be found. Neither is there a final answer to this question. And as the answer is relative both to the object of learning and the learners, it has to be found in the interaction between teachers and students, teachers and teachers, students and students, in relation to the object of learning. If teachers focus on finding and enacting the object of learning and in interaction, and do so in a systematic way, in accordance with the principles of scientific research, we may call it teacher research. Such a focus is presupposed both by action research and LS. In any case, there must be some activities for the participants to participate in to find out what there is to be learned. Such activities must be related to the object of learning and the latter has to be referred to somehow in order to make it possible to choose between different objects of learning and communicate them to other teachers. In this regard, action research points to content, LS to educational objectives (although seeing them as too wide, implying that further – or other – differentiations can – and shall – be made). In other words, both approaches argue against pre-specified definitions of what is to be learned and argue for

trying to find the answers in joint activities related to the object of learning. The latter is initially referred to in terms of content by action research, and in terms of educational objectives by LS. The alternative description of educational goals suggested by action research is the so-called ‘process model’ for curricular specification, originating in the choice of content and developing into characterization of features of teaching.

As mentioned previously, in action research the question ‘What is to be learned?’ is addressed in terms of features of teaching (this is the process model). In LS – if built on variation theory – the same question is dealt with in terms of critical aspects and critical features (of what the students are expected to learn): but it is made possible for these critical aspects and critical features to appear by means of patterns of variation and invariance constituted in interactive teaching. In this way, the answers from both approaches to educational research are different, but include in both cases an answer to the question ‘How should the object of learning be learned?’

Conclusions

In this article, we have contrasted two ways of addressing the question ‘What is to be learned?’, one answer from action research and one from LS, and we found that both reject educational objectives as the answer, but LS accepts them as a point of departure, whilst action research takes content as the point of departure.

Action research suggests that the question ‘What is to be learned?’ is addressed in terms of aspects and features of teaching implying (but not being) certain outcomes. LS suggests that the question ‘What is to be learned?’ is addressed in terms of critical (necessary but yet not attained) dimensions of variation and features, the discernment of which are made possible through appropriate patterns of variation and invariance.

Accordingly, both models’ answers to the question are supposed to be discovered, tried out and arrived at through explorative efforts and research, carried out by the teachers themselves.¹

Note

1. We greatly appreciate the most insightful comments on our article by its two reviewers. Both have alerted us to the risk of having exaggerated the difference in how the question ‘What is to be learned?’ is addressed in the two research traditions dealt with in this article. One of the reviewers advanced the conjecture that the view expressed in the Educational Action Research tradition is heavily influenced by the specific context (the Humanities Curriculum Project) in which the tradition evolved. The focus of the original research was on student discussions about controversial issues. As stated earlier, our comparison was carried out from the LS perspective. Would we have taken the Educational Action Research as our frame of reference, or if we had chosen a third, neutral point of departure, our conclusions would – in all likelihood been different.

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