



## Self-regulated learning in the context of teacher education

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### Abstract

Self-regulation usually refers to awareness and knowledge of one's learning and cognition and the control of one's cognition that renders this ability essential in learning and development. Recently, the concept has been studied intensively, except in professional learning. The concept's potential is especially good in student teacher learning since prospective teaching professionals are likely to be confronted with modes of learning based on self-regulation to be adopted in their teaching. Also, new approaches to meaningful, active learning in teacher education programmes encourage teacher educators to promote self-regulation in their students. A qualitative study in two countries investigated the differences in perceptions among teacher educators and student teachers about meaning, implementation and expected behaviours of self-regulation as a vehicle for learning in teacher education programmes. Results from the interviews indicate clear support for the concept of self-regulated learning, although the conditions for its actual implementation are not always favourable. Self-regulation places considerable demands on organization and curricula in teacher education. Student teachers were found to have a more positive attitude toward self-regulated learning and higher expectations about their own self-regulative competencies than their teachers, who seemed more concerned with their students' preparation for the profession. Highlighting self-regulation in teacher education programmes requires new ways of interaction between teacher educators and their students. © 1999 Elsevier Science Ltd. All rights reserved.

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### 1. Self-regulated learning and teacher education

The motivation for this study of self-regulated learning in the context of teacher education emerged from both the need to restructure teacher education programmes, and the importance

attributed to self-regulated learning. In the next sections we consider these two aspects and provide a framework for the scope of this study.

Restructuring teacher education (Lieberman, 1993) and revitalizing programmes for learning to teach (Darling-Hammond, 1996) coincide with new conceptions of professional development and presuppose ideas about the acquisition of professional knowledge (Brooks, 1994).

Most teacher education programmes have always been based on providing research-based knowledge

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(Fenstermacher, 1993) and on practising necessary competencies prior to entering the profession (Eraut, 1994). Most teacher education institutions still offer university-based curricula that target the application of theories in practice with little opportunity for self-directed learning (Darling-Hammond, 1996). The curricula feature knowledge acquisition and application (Fessler, 1995). These programs hardly provide opportunities for self-directed learning for the learners to construct the knowledge required (Darling-Hammond, 1996).

The dissatisfaction with the existing teacher education programmes has given rise to criticism (Holmes group, 1992, 1996) and has led to proposals for university–school partnerships, to reflection-oriented approaches to student learning and to greater emphasis on the voice of practitioners and on authentic contexts for learning.

It has been suggested that partnerships with professionals and the corresponding learning process can flourish only if student teachers are provided with opportunities to learn as professionals (Miller, 1995). This proposal implies that teacher education programmes must not be guided mainly by an orientation of knowledge assimilation alone but must also involve student teachers in constructing their knowledge. Moreover, the idea presupposes active and meaningful learning situations (Shuell, 1990), in which student teachers as beginning professionals take control of their knowledge acquisition (Engeström, 1994). Consequently, teacher education is challenged to stimulate and encourage student teachers to learn as professionals, to construct their practical knowledge, to develop an attitude of reflective inquiry and to experiment with ideas and teaching skills. This challenge corresponds closely with the concept of self-regulated learning (SRL).

## 2. The concept of self-regulation

The recent literature hosts a considerable number of perceptions and definitions of self-regulated learning (SRL). Generally, the process is metacognitive as well as meta-motivational (Boekaerts, 1995) and aims at control over one's learning

(McCombs, 1989). It comprises a series of actions, of which the first is *goal setting* (including deliberations regarding the importance of the selected goals), the next is planning and *selection of appropriate strategies* for goal accomplishment, and the final one is performance *evaluation*. Self awareness, self-monitoring and self-evaluation are critical attributes at all phases (see Schunk, 1994; Zimmerman & Schunk, 1989; Boekaerts, 1995; Butler & Winne, 1995). More specifically, Corno (1994) emphasized the link between cognitive and affective aspects and the need for students to acquire control over their motivation, emotional responses and environmental distractions. Such control represents the volition to accomplish the task and to avoid self-induced distractions and anxiety (Corno & Mandinach, 1983). Corno also viewed control processes as effective differentiators between novice and expert teachers. The experts know which distractions should be overlooked and which should not.

Additional integral elements of SRL include monitoring, awareness of task difficulty—which Pintrich and DeGroot (1990) claim is an essential aspect of metacognition—and feedback to change behaviour accordingly. Another feature of SRL is the integration and utilization of cognitive, metacognitive, motivational, perceptual and environmental components aimed at successful resolution of academic tasks (Lindner & Harris, 1992). There are, however, slight differences between the emphases on the defining elements of SRL. For instance, Butler and Winne (1995) describe SRL as a metacognitive style of engaging in tasks in which students exercise learning skills and select and apply tactics and strategies that generate products conducive to goal attainment. Being aware of their qualities, they monitor and control their learning and cognitive processes. Boekaerts (1995, p. 189) has emphasized the importance of complementing metacognitive self-regulation with metamotivational self-regulation. She proposes extending the concept by introducing multiple forms of self-regulation. Meta-motivational self-regulation refers to two components: motivation control (the capacity to activate favourable scenarios, thus creating a positive state and learning intention) and action control (the capacity to enact the learning intention

and protect it from competing action tendencies). In elaborating upon situation and domain-specific perspectives of SRL, Alexander (1995) investigates the influence on SRL of subject-matter knowledge and individual interest. This subject has been addressed in intensive discussions revolving around the assumption that general reasoning heuristics are applicable to a great many tasks, situations and contexts, in contrast to content-specific knowledge. Dochy (1992) finds that domain-specific knowledge benefits SRL and facilitates its processes. Rogoff (1990) claims that cognitive processes are contextually bound, and that self-regulated learners must therefore monitor internally, modify and evaluate their learning process and must be alert to contextual external conditions.

In conclusion, Draves (1980 p. 191) suggested that “Self-directed learning begins with the learner. It sees the learner as the primary impetus for and the initiator of the learning process . . . all other educational features are put in secondary light, as aids to the learning process rather than its central elements”. The definitions of SRL generate a portrait of self-regulated learners such as the following:

Self-regulated learners are confident in their strategies. (Biemiller & Meichenbaum, 1992). They set goals for extending their knowledge and sustaining their motivation, and they are aware of the impact of their knowledge and their beliefs and the implications of the differences between various kinds of information for approaching tasks. They have a grasp of motivation, are aware of their affect, and plan ways to manage the interplay between various aspects of affect as they engage in a task (Butler & Winne, 1995). Moreover, they attribute success or failure to themselves rather than to others—a characteristic of an internal locus of control—and invest greater effort, which leads to positive outcomes: achievement, self-esteem. They select strategies, seek and retrieve information, monitor their commitment to goals, adapt, adjust, revise and modify. Self-regulated learners control learning outcomes from within, are intrinsically motivated, self-monitoring, self-directing and exhibit greater flexibility in taking on/adapting to uncertain challenges in the classroom (Lindner & Harris, 1993).

### 3. Self-regulation and student teacher learning

Although the notion of self-regulated learning is not new to teacher education (Lieberman, 1993; Gilroy, 1993; Collins, 1996), it has gained momentum in the last decade on several grounds:

- In the event of rapid growth of knowledge or constant replacement by new knowledge, no educational institution can provide its students with the information they will need even within five years after graduation (Corno, 1994). Consequently, promoting self-regulated learning becomes a necessary (inherent) goal of continual life-long education.
- Secondly, teacher autonomy and accountability—two elements of any profession—can be practised only if teachers become self-regulated learners (Draves, 1980). Self-regulated learning is intrinsically inherent in autonomy. One can hardly be autonomous or accountable for one’s own learning, if the process is planned and organized by others.
- Thirdly, the recent educational shift from a technical rationality orientation towards one of reflection in action also motivates the need for self-regulated learning (Gilroy, 1993). “The technical rationality that shapes the modern practice of adult education is at odds with a pedagogical process that seeks to involve teachers in a dialogical and egalitarian relationship with their students” (Collins, 1996, p. 72). Accordingly, teaching goals should focus not on transmitting information but rather on preparing students to acquire information on their own. This shift calls for learning environments which are supportive and conducive to self-regulated learning.
- Fourthly, the perception of teachers’ roles is shifting from monopolizing and providing knowledge towards helping students learn on their own. This new role requires that they reach their students instead of teaching them directly.

Teacher education programmes are increasingly urged, both societally and professionally, to renew their teaching concepts to promote meaningful student teacher learning and to reconsider the ‘learning routes’ they provide for preparing prospective

teachers in a knowledge society (Gilroy, 1993; Taylor, 1983). Active knowledge generation in meaningful learning environments is the hallmark of a teaching concept that closely relates to student teachers' development needs, which will be governed by the self-directed and self-initiated activities of the learners in acquiring control over their knowledge construction (Spiro, 1990). In self-regulated learning in professionals, additional areas of importance include conceptual exchange among professionals, challenge of beliefs and reflection on action (Gilroy, 1993).

Given the importance of self-regulated learning as a means of preparing prospective teachers, the time has come to examine this concept as a vehicle of student teacher learning in the context of teacher education (Hiebart, Carpenter, Fennema, Fuson, Humman, Murray, Oliver & Weanne, 1996; Eraut, 1994). Also, more research is needed to understand the actions of teacher educators that promote or inhibit SRL: 'Forthcoming qualitative, descriptive or interpretive research also needs to extend beyond the classroom to other arenas in which self-regulation is learnt and self-regulatory skills are developed' (Corno, 1994 p. 201). In view of these needs, this study aims at enriching the perspectives of SRL by examining its perceptions and potential in the context of teacher education.

## 4. Method

### 4.1. Subjects

Our study was conducted in two different environments—Dutch and Israeli. Participants consisted of teacher educators—12 in the Israeli group and 30 in the Dutch group—and student teachers in their second, third and fourth years of study—20 in the Israeli group and 28 in the Dutch group.

### 4.2. Procedure

Participants were interviewed in their native languages by graduate students who had been especially trained for this purpose. The interviews were semi-structured (Spradley, 1979; Sabar Ben-Yehoshua, 1990), starting with open-ended

questions to allow any perceptions and thoughts of the interviewees to emerge. These were followed by more specific questions wherever the need arose for more elaboration and clarification, thus enabling emergence of the practitioners' voices. This procedure accords with the notion of grounded theory suggested by Glazer and Strauss (1967) and included three main topics, each addressed in specific sets of questions.

The first topic was the *meaning of SRL*, and the initial question was phrased as follows: The concept of SRL is widely discussed in current literature, as well as among educators, and is perceived as an important aim of teacher education. What does this concept mean to you? The following related questions illuminated and broadened the initial responses: Is SRL in any way reflected in your teacher education programme? If it is reflected, in what way, and if not, why not? Which typical elements would you associate with SRL in your teaching? Which typical conditions facilitate SRL in your teaching?

The next topic revolved around the *implementation of SRL* in the teacher education programme. Questions were again phrased in general terms: You have just elaborated on the meaning of the concept of SRL. Please describe the activities needed to implement SRL in the teacher education programme in which you are involved. Are any aims regarding SRL reflected in your teacher education programme/experience? If so, please describe how. If not, can you think of any reason why not? Can you describe any instructional setting in which you (as a teacher educator/student teacher) are involved? Do you have criteria for evaluating (assessing) your students' SRL?

The third topic involved the *expected role behaviours* of teacher educators and student teachers typical in SRL. The questions were as follows: Which specific actions would you take to develop SRL competence in your students? Could you describe instructional settings which are typical for SRL in your teaching? What do you perceive as a desirable situation for developing SRL competencies?

### 4.3. Data analysis

The interviews were transcribed verbatim, translated into English for purposes of data-analysis and

reporting and then content-analyzed by two independent analyzers. The content analysis sought to identify and elicit relevant topics of reference (Hitchcock & Hughes, 1995), while avoiding any intervening predetermined categories. In view of the approach suggested by Miles and Huberman (1994) several steps were followed: After having read the transcribed interviews to become familiarized with the interviewees' responses, and after having clarified any areas of confusion in the interviewees' responses, the protocols were divided into units of analysis. In our first order analysis each idea or thought constituted a unit of analysis. The references derived from each unit were grouped according to similarities of meanings and classified under common denominative categories. This step was repeated several times by working back and forth through the data until a satisfactory inter-rater agreement was reached and further analysis became redundant. Checking the relevance of each reference to the category in which it was classified served to verify this bottom-up procedure.

A second-order analysis in which the emergent categories were classified according to our three interview topics yielded several descriptive frames for each topic. Most categories—albeit not all—could be classified within these frames. Frames were meant to provide an interpretative format. In the frame for the first topic of 'SRL meaning' each comment was coded according to the following features: *defining elements—conditions of SRL*.

*Example.* A teacher educator stated: "A tremendous shift in attitudes will be needed to let students control their own learning. In the end, however, it is rewarding to see how students take more responsibility for their learning" (D<sup>1</sup>). This statement was coded according to the condition 'attitude shift' and the defining element 'taking responsibility'.

The frame adopted for the second topic of SRL implementation consisted of the following features: *activity-expected outcome*

*Example.* A student teacher stated: "At our college, we do a lot of problem-based instruction, which means that you have more influence and can choose what to study" (D). This comment was coded according to the teaching activity 'problem-based instruction' and according to the expected outcome 'choice in study' and 'more influence on study'.

The frame adopted for roles was typified as *teacher educators' role—student teachers' role*.

*Example.* A student teacher stated: "When I organize my own learning, I really expect my teacher to monitor what I am doing and support me with relevant information" (I). This was coded as the teacher educator's role 'information provider' and as the student teacher role 'organiser of learning'.

Each category from the first-order analysis was iteratively coded under respective frames until a stable and consistent placement was reached. After this second-order analysis, each interview was coded again in the respective categories to generate a set of statements within each category for each frame. The first- and second-order analyses were performed separately on the student-teacher and teacher-educator data.

As a third and final step in the procedure, a summary was constructed identifying the categories most frequently mentioned for each feature of each frame. This summary consisted of the perceptions of student teachers and teacher educators with regard to common issues concerning the three SRL topics in their own teaching and learning environment. In this way commonalities as well as differences in perceptions and beliefs on SRL could be represented directly, while at the same time allowing for the integration of data on two levels: direct comparisons between groups and between countries.

## 5. Results

The emerging topics described in the following sections are compared across groups, exemplified by excerpts from the interviews and presented in summary tables. Remarkably, very favorable

<sup>1</sup>(A 'D' after a quotation indicates a statement made by a Dutch participant; an 'I' indicates a statement of an Israeli participant)

Summary Table 1  
SRL-defining elements

Defining elements of self-regulation as perceived by:	<i>Teacher educators</i> in both countries	Consist of:	Goal orientation; choice in learning materials; reflection; self management and <b>self study</b>
	<i>Student teachers</i> in both countries		<b>Self-study</b> ; independent learning; planning skills
While in:	<i>The Netherlands</i>	<b>Motivation</b> ; accountability; responsibility; ability to withhold help.	Managing resources; <b>motivation</b> ; independence
	<i>Israel</i>	<i>Teacher educators</i> ; perceptions include: Skills in reading and comprehension; problem orientation; learning from experience; resource management; self-evaluation.	<i>Student teachers</i> ; perceptions include: Learning by discovery; theory and practice integration

The common categories across groups are in bold; groups are in italics.

attitudes were expressed towards SRL in the references of both teacher educators and student teachers.

### 5.1. Defining elements

The perceptions of SRL as a major constituent of professional development span a broad range of elements. Some are common to all groups, whereas others differ from group to group (see Summary Table 1).

Teacher educators expressed their conviction that SRL implies a major shift in attitude about teaching and learning. They defined SRL primarily from a teacher's perspective: on the one hand they stated the necessity to provide basic knowledge, while perceiving themselves as main resources and scaffolders of learning, and on the other hand they stressed the necessity to stimulate students to manage and reflect upon their learning. Typical of the teacher educators' statements was the focus on preparing their student teachers for their future roles as professionals.

Two major elements common to both Israeli and Dutch teacher educators were *choice of learning materials* and *goal orientation*. These elements were reflected in the interviews as follows:

“A basic element concerns the ability to locate relevant information... First, one needs to choose from the abundance of learning materials which are developed today” (I), and “Independent learners must be oriented by learning goals and pursue their own objectives” (D).

Metacognitive skills, such as *reflection* and *self-management*, were also mentioned frequently as basic elements of the concept of SRL:

“Self-regulated learning cannot occur without reflective thought... Each step must be considered to evaluate its contribution and relevance to the learning goal... Reflection upon learning experiences offers the key toward high levels of SRL” (I).

The perceptions of both Dutch and Israeli teacher educators were predominantly goal-oriented. A slight tendency of the Dutch teacher educators towards an affective orientation and of the Israeli teacher educators towards a cognitive orientation was noted. For instance, the Israeli teacher educators included such elements as skills in comprehension, learning from experience, problem orientation, and self-evaluation in their perceptions

of SRL, whereas their Dutch counterparts more often referred to motivation, responsibility and accountability of students and their own ability to withhold help.

The student teachers in both countries focused primarily on the amount of *self-study* provided by the programs in which they participated and on becoming more *independent* in their learning. They described this process as follows:

“I like to work on a topic of my interest and plan it with my fellow students. It gives me more pleasure when I accomplish things, when I have a clear say in what I want to learn and when I want to learn it” (D).

Differences between the two groups of student teachers were also noted. The Dutch students added to their descriptions of SRL the elements of managing resources and motivation; the Israeli students focused primarily on learning by discovery, implying that in the absence of teachers, they must be able to “do the job by themselves, that is, read, comprehend and classify information, perform analysis, draw conclusions and acquire more knowledge...” (I). An additional defining element suggested by the Israeli student teachers concerned the connecting of theory and practice: the ability to go back and forth between theory and practice. In this respect one teacher educator quoted a student teacher who reported being told in the first meeting with her cooperating teacher: “Now you must forget what you learned in college, this is real life” (I).

## 5.2. Conditions

Both teacher educators and student teachers agreed on the need for more *flexibility* and *openness* if SRL is to be taken seriously in teacher education programs. Implementing SRL requires an open curriculum system that provides different learning opportunities for students and a flexible approach to teaching. Teacher educators seemed somewhat pessimistic about attaining this objective and observed that present facilities were not appropriate for such teaching. Both groups mentioned lack of funding, inadequate learning environments, over-structured curricula and externally prescribed ob-

jectives, none of which promotes independent learning. “SRL cannot be implemented under time pressure. We need a more flexible curriculum. If students are expected to reflect on their learning through self-evaluation, they need more time. If we want them to be motivated we have to allow them some freedom in choosing materials . . . all these conditions require time and curriculum flexibility” (I). “Development of SRL competence requires a cultural shift. We need to be able to allocate our time without being told how much to devote to each topic of study...” (D).

Teacher educators, however, think that an ‘open curriculum’ must be based on clear guidelines concerning the subjects to be studied, accompanied by assessment procedures, because of possible future requirements to comply with external standards. High planning competence is also deemed necessary for both teacher educators and student teachers. There were slight differences between the Dutch and the Israeli teacher educators (see Summary Table 2).

The Israelis framed their requisite conditions in terms of interactional relations of *cooperation*, i.e. *trust* and *faith* in students was perceived as important and dependent upon the institute’s policy. For instance, in the open curriculum system, students’ choice of learning topics and materials cannot be actualized without suitable institutional support.

“If I don’t believe that my student teachers can become self-regulated learners, the best didactic tools will be useless. Not only do I have to trust they can become self-regulated learners, I have to make them sense that I believe they can” (I).

The Dutch teacher educators seemed more organizationally oriented. They stressed the importance of defining flexible course *objectives* and providing for *organizational change* to suit learning needs. They also suggested introducing SRL at an advanced stage in the teacher education program because of the need for greater structure in the earlier stages. A laboratory or practical setting was suggested for enhancing SRL skills.

Student teachers agreed with teacher educators that there was a clear lack of facilities (especially

Summary Table 2  
Conditions for SRL implementation<sup>a</sup>

Conditions required by <i>Teacher educators</i> In both countries are:	<b>Flexibility in programs; open curriculum system;</b> adequate learning environments; time facilities and budgets; clear objectives.	In <i>the Netherlands</i> they add	Flexible course objectives; organizational shift in thinking; self-awareness; focus on learning needs.
		And	
And by <i>student teachers</i> :	Personal expression; freedom of thought; time for learning; organizational facilities; <b>flexible and open curriculum;</b> adequate curriculum materials; motivation and curiosity.	In <i>Israel</i> they add	Cooperation; trust and faith; institutional support; reflective competence.
		In <i>the Netherlands</i> they emphasize	Self-discipline; competence in planning; cooperation.
		And	
		In <i>Israel</i> they emphasize	Learning skills; smaller classes; choice of topics.

<sup>a</sup>Common categories across groups in bold; groups in italic.

curricular materials and computer programs) for implementing SRL. Time for learning was also viewed as a problem because self-study and discovery learning activities entail very labor-intensive assignments. Most student teachers in both countries, however, viewed SRL as an opportunity for *personal expression* and *freedom of thought*.

“When my mentor allows me to plan my lessons by myself and does not interfere, I have to think by myself, . . . freedom of thought enables me to become an independent learner” (I), and “If they want me to be accountable for my teaching and to plan by myself, they have to let me think on my own” (D).

This outlook was also reflected in the following statements: “I expect my teacher educator to inspire our motivation to study by ourselves, . . . if I am not motivated, I won’t learn by myself” (D). These conditions point to an eagerness for freedom of thought and personal expression, i.e., “If somebody else tries to direct my thought, it will interfere with my independent study . . . I need to feel that I have the freedom to learn by myself, and I need to be given the opportunity to do so” (I). This frequently mentioned personal orientation to learning was complemented with references to the need for personal planning and greater self-discipline

among the Dutch student teachers. The Israeli student teachers stressed more the provision or lack thereof of learning skills, smaller classes, and the broader choice of topics to be studied. One of the interviewees expressed this sentiment very clearly: “How can one become a self-regulating learner without having the appropriate skills?” (I). Both teacher educators and student teachers agreed on the need for more *flexibility* and *openness*, as well as for strong learning skills, planning competence and better organizational facilities for SRL in their present programs.

### 5.3. *Expected outcomes*

Both teacher educators and student teachers expected that developing SRL in teacher education would lead student teachers to become more *autonomous*, function on a high professional level better, *internalize* their learning and knowledge and be better prepared for future roles. All these outcomes point to better professional development of teachers as individuals. In addition, the Israelis expected personal enrichment in the field of knowledge, whereas the Dutch looked forward to *curriculum reconstruction* and enhanced motivation or student participation, which appear to be more institutional outcomes. (See Summary Table 3.)

Summary Table 3  
Expected outcomes

<i>Teacher educators</i> in both countries expect	<b>Student autonomy; internalization of knowledge; preparation for future roles.</b>	In <i>the Netherlands</i> they add And In <i>Israel</i> they add	Curriculum reconstruction; enhanced motivation; student participation Personal enrichment
<i>Student teachers</i> in both countries expect outcomes in	Social skills; investment in learning; <b>student autonomy; internalization of knowledge;</b> motivation.	While in <i>the Netherlands</i> they stress And In <i>Israel</i> they stress	Counseling; peer contact. Widening perspectives; learning skills; self-evaluation.

Student teachers provided a very favorable evaluation of SRL because it satisfied their freedom, curiosity and motivation to learn. Nevertheless, they still did not consider the strategy suitable for teaching in elementary schools. One student teacher expressed the following opinion: “No, I will not use it in my own teaching because I do not consider the method suitable for young children. They need structure and clear tasks. I have learned what organizing your own learning involves. Young children can not handle this responsibility” (I).

Student teachers in both countries seemed to agree that SRL improves social and learning skills. The negative outcomes of SRL mentioned by student teachers included the fear of a diminished investment in their own learning. The teacher educators’ perception of SRL reflected a clear concern for the need to invest in their own professional development, which requires that they innovate their teaching and challenges them to offer their students interesting courses.

In comparison of the two groups of student teachers, the Israelis appeared more cognitively oriented, as reflected by their references to widening of perspectives, acquisition of learning skills and self evaluation, whereas the Dutch perceptions were more affectively oriented as reflected by their references to counseling and peer contact.

#### 5.4. Activities

The teacher educators mentioned a broad range of activities in teacher education programs that

support the implementation of SRL. (See Summary Table 4.) The Dutch teacher educators interpreted SRL activities from a methods point of view. They associated SRL with topics like project method, problem-based instruction, individualized learning and practice-oriented instruction.

A typical remark from the Dutch teacher educators was:

“Teaching revolves around cases and problems drawn from real-life classrooms that I offer to reflect upon and to give my students an impression of actual practice. The value added by me as an educator is that I select cases that are worthwhile and open for discussion” (D).

The activities mentioned by the Israeli teacher educators were reading and interpretation of learning materials, knowledge construction and provision of learning tools. Although the perceptions of the two groups of teacher educators differed in their orientation, they were similar in not referring to affect or meta-cognition. Interestingly, the activities mentioned all concerned relatively low cognitive demands placed on students as compared with the perceived elements of SRL. This observation will be elaborated upon in the concluding section.

The views expressed by student teachers in both countries differed slightly from those of their teacher educators; they described activities that allow for *independent work* and *workshops* to help them achieve their own learning goals. They also seemed eager to study on their own and to present the products of their learning to the teacher

Summary Table 4  
Implemented activities<sup>a</sup>

Implementation is perceived by teacher educators in	<i>The Netherlands</i>	Project method; problem-based instruction; individualized learning; practice-oriented instruction. As based on	By student teachers in both countries as:	<b>Independent work; workshops; curriculum choice.</b>
	<i>Israel</i>	Interpretation of learning materials; learning tools; knowledge construction.		

<sup>a</sup>Correspondences in bold.

educator for comment, evaluation and reflection. An important difference between teacher educators and student teachers was that student teacher included independence in making choices about the curriculum in their statements.

“It takes a while to get used to the idea of organizing your own learning, especially with our teachers. Sometimes they want us to study certain parts of the book, but often we obtain information for ourselves in the library and find our way by ourselves” (I).

### 5.5. Roles

Additional data were obtained about the roles of teacher educators and student teachers in promoting SRL. Summary Table 5 presents the findings.

With regard to the teacher educator’s role, the Dutch educators perceived their roles as *providing information* and guarding the content to be covered, i.e., a content-oriented perspective. Some teacher educators clearly stated that SRL harbors the danger of failing to meet the prescribed curriculum objectives. “You need to be aware constantly that your students will have to pass the exam. I am responsible for ensuring that they are taught accordingly and prepared for entering the profession ... (D).

Israeli teacher educators, however, revealed a more student-centered orientation and stressed the importance of being a provider of *tools for thought* and a stimulator of conceptual change. All teacher educators, however, expected students to perform independently in their work. Being a reflective teacher was perceived by both groups of

teacher educators as a crucial condition. As one of the interviewees claimed: “How can I facilitate reflective thinking in my students if I am not a reflective thinker myself? I don’t believe this is possible. Moreover, I have to make my reflective thinking explicit ...” (I).

Common to both groups was the perception of the teacher educator’s role in guiding the learning process by scaffolding and shepherding (Sugrue, 1997) and in supporting their students toward central learning goals. In addition to several cognitively-oriented roles—provision of tools for discovery and of learning principles, critical evaluation and stimulation of conceptual change—the perceptions of the Israeli group of teacher educators included a number of affectively oriented roles in acceptance of failure and support of motivation as well.

Remarkably, the Dutch student teachers’ perception of the teacher educators’ roles does not initially seem to accord with their SRL defining elements, which focused on students’ choice and self management. The Dutch student teachers saw teacher educators’ roles primarily as resource people and providers of information. “I would like to be able to choose what I learn and to receive support from the teacher educator, which is not presently the case. My teacher educator often tells me what to study but is not around when I need him” (D). The Israeli student teachers focused on cognitive and didactically oriented roles for their teacher educators that could support their independent learning (i.e. motivation, provision of feedback and creative ideas, new avenues of thought, criteria for self-evaluation, as well as use of students’

Summary Table 5  
Roles in self-regulative learning<sup>a</sup>

Teacher educators regard themselves	In the Netherlands	Provider of information; <b>counselor and guide;</b> <b>reflective thinker;</b> guardian of content.	And their students see them primarily as	Linker of knowledge; <b>motivator;</b> counselor; information provider.
	In Israel as	<b>Counselor and guide;</b> <b>reflective thinker;</b> creative evaluator; provider of tools; stimulator of conceptual change.	And their students see them primarily as	Challenger of learning; guide, aid in ideas; <b>motivator;</b> provider of feedback
Student teachers see themselves as	In the Netherlands	<b>Searching knowledge;</b> <b>reflective thinking;</b> <b>planning learning</b>	And their teachers see them primarily as	Involved learners; applying learning skills; gathering; information; <b>independent learners</b>
	In Israel	<b>Searching knowledge;</b> <b>planning learning;</b> <b>reflective thinking;</b> goal-oriented learning	And their teachers regard them primarily as	<b>Independent, reflective learners;</b> applying knowledge

<sup>a</sup>Correspondences in bold.

perspectives), whereas the Dutch student teachers emphasized providing information, guiding and selecting relevant information as suitable roles for the teacher educator.

Teacher educators in both countries professed a more conservative view of the student teachers' roles than of their own roles. The Dutch teacher educators stressed the importance of applying learning skills, gathering information and being deeply involved in learning, which indicates a teacher-centered orientation based on exchange of information as a prime instructional role: "SRL requires extensive application and integration of knowledge. This is its strength; students need time of their own and a chance to work through their materials" (D).

The Israeli teacher educators seemed to have a more educationally *progressive orientation* with regard to their perception of the students' role (i.e., not merely applying skills but putting knowledge to work and integrated learning). This is also the case with regard to the perceptions of their own role (i.e., being a counselor and guide instead of a knowledge

deliverer). They expected student teachers to plan their study, make choices of their own and apply knowledge and skills while at the same time reflect on it. One of the interviewees expressed this very clearly: "Only an open-minded teacher can help develop SRL skills. Dogmatic teachers will probably not allow their students the freedom of choice of topics or flexibility in planning their study unless their intentions coincide exactly with what the teacher had in mind" (I).

With reference to their own roles, student teachers' perceptions were considerably more progressive than those of their teachers; they perceived their task primarily as a search for knowledge and resources. The Israeli student teachers linked this role explicitly to reflective thinking and goal-oriented learning.

The student teachers and the teacher educators differed slightly in their expectations regarding the perceptions of each other's roles. The teacher educators seemed to emphasize control over the learning processes. A number of teacher educators

expressed concern about the possibility of their diminishing role as teachers of student teachers. The student teachers felt more confident when in control of their own learning. They were concerned about learning in isolation with hardly any opportunity for social interaction.

## 6. Conclusion

Teaching is guided by the perceptions of practitioners rather than by those of researchers and philosophers of education. For this reason, among others, we value the disclosure of practitioners' perceptions of SRL, especially in the context of teacher education, an area which has hardly been studied in this respect. In this study teacher educators and student teachers constituted the practitioners whose perceptions of SRL were investigated.

The disclosure of discrepancies between the perceptions of researchers and practitioners are likely to guide both groups in investigating the underlying causes of these discrepancies and searching for ways to compensate for them. The comparison of SRL perceptions between countries is apt to disclose culture-bound vs. cross-cultural educational orientations, thereby enhancing the perspective of the topic under study. We based our study of both teacher educators and student teachers on our assumption and belief that understanding of perceptions is an important condition for effective communication about the meaning of SRL, a prerequisite for successful dissemination of such knowledge. Hence, the main topics of the study—SRL defining elements, implementation and roles—are discussed with regard to the emerging commonalities as well as the differences between them.

### 6.1. *Perceptions of SRL elements*

The analysis of SRL elements identified both common and unique features. The common elements mentioned by teacher educators and student teachers in both countries primarily indicated a cognitive orientation towards SRL, including both low and high levels of cognition. Reading comprehension exemplifies a relatively low level, whereas reflection and self-study exemplify a higher

level of cognition. Along with this commonality, an interesting culture-bound characteristic emerged: while the Dutch teacher educators referred to affective elements, such as motivation, responsibility and accountability, the Israeli teacher educators did not. Viewed from this context, the perceptions within countries were more similar than those between countries (i.e. the Dutch teacher educators' and student teachers' groups were more similar to each other than to the Israeli groups; likewise, the two Israeli groups were more similar to each other than to the Dutch groups). This difference might be understood as resulting from Israel's specific situation of being a state of fighting for survival both politically and economically. This condition calls for intensive efforts to develop the intellectual-cognitive aspects of its citizens as a means for survival, while perceiving affective development as luxury.

### 6.2. *Conditions for SRL implementation*

No specific culture-bound characteristics worth noting were observed in the realm of implementation conditions. Most of the conditions mentioned appeared to be cross-cultural, the most salient being an open curriculum system. The interviewees thought that an open curriculum system would relieve them of the stress resulting from time constraints and the need to cover certain amounts of subject matter. Responsibility for introducing an open curriculum system was attributed by the interviewees to institutional policy rather than to teacher educators as individuals. On the one hand, time and flexibility are not always possible at institutions with strict curriculum requirements; on the other hand, however, institutions cannot afford to limit openness too severely. The conditions mentioned by all four groups may be classified under two main topics: One topic concerns administration and organization, including conditions such as budgets, institutional support, and resources. The second topic concerns pedagogical issues such as flexibility, openness, freedom of thought, motivation and curiosity.

Satisfying the pedagogical conditions necessitates, according to our interviewees, a cultural shift in education. Such a shift involves educational attitudes which correspond with the SRL orientation

and calls for attitudinal change. As is well known, attitudinal change requires energy and time on the part of educational leaders and policy makers. Moreover, attitudinal change may not suffice unless accompanied by the pedagogical knowledge and skills required for the implementation of SRL. This is not surprising, as the conditions were phrased in general terms which covered a broad range of SRL skills.

### 6.3. *Outcomes and activities*

The activities were the only area in which no similarities were found between the two groups of teacher educators. This discrepancy appears to be only natural, since the operationalization and actualization of SRL elements renders differences more distinct, concrete and specific. Institutional routines and conditions may also account for this dissimilarity. Moreover, none of the activities mentioned connoted the affective elements of SRL. This is rather surprising, given that the affective aspects of SRL were mentioned as important elements of SRL by Dutch teacher educators. In addition to disagreeing with the perceptions of SRL elements, the absence of affect deviates from the definition of SRL in the literature, which emphasizes the affective aspects. One reason for this discrepancy may be that motivation—like other affective elements—is not an easily observable explicit construct. It is also difficult to identify the activities that promote affective elements and to decide how to translate them into operational and observable activities. Another reason may be the difficulties in activating affective elements, which are inherently tacit. The awareness of the lack of congruity between the perceived elements and expected procedures for their activation may lead to two different types of consequences. A positive consequence could involve a challenge on the part of educators to close this gap. A negative consequence would be manifested by frustration, cognitive dissonance, and possibly a renouncing of any effort to bridge the gap.

The outcomes expected by the four groups studied, as well as the reported activities (viz. Summary Tables 3 and 4), were substantially fewer than the perceived defining elements of SRL. For in-

stance, defining elements involving high levels of thinking (such as reflection) were referred to neither among the expected outcomes nor among the implemented activities. This discrepancy implies that not all SRL elements are activated and expected as outcomes. Is this a result of lack of time, or perhaps a lack of knowledge of how to implement certain elements? Or maybe there is still another reason? These possibilities call for investigation. The relatively small numbers of activities may be attributed to the absence of the conditions required, i.e. attitudinal change, budgets and facilities, curriculum flexibility, time investment and even the skills to activate SRL. The relatively low number of expected outcomes compared with the number of the perceived SRL elements may be explained on the same grounds. On the other hand, it may reflect skepticism regarding the possibility of actualizing all the elements inherent in SRL in teacher education programs today.

### 6.4. *Roles*

The analysis of the perceived roles yields several commonalities across countries. In this category, teacher educators in both countries appeared to be more conservative than their students, possibly because they are more realistic in this respect and aware of the difficulties that have been encountered in the implementation of SRL. The fact that the teacher educators mentioned a broader range of roles than did the student teachers is only natural, as they are acquainted—even if only on a theoretical level—with a broader perspective of possibilities. The reason that Israeli teacher educators appeared to be more progressively oriented in comparison with their Dutch counterparts may be accounted for by the fact that the Israeli educational system is relatively new. It seems as if teacher educators (more in the Netherlands than in Israel) uphold their role of knowledge provider and are concerned about maintaining control over the process of instruction. Teacher educators are, however, clearly aware of the need to provide opportunity for conceptual change and reflective thinking. It is regarded as the best way to prepare students for their future professional task. Student teachers favor an active supporting as well as a critical reflective role

for their teachers, thus implying a shift towards more active and meaningful learning methods in teacher education. In this respect, the degree to which teacher educators find their students able and prepared to learn in such environments may give rise to doubts. Teacher educators stress the need to motivate and stimulate students whereas students indicate they need support and fear becoming isolated learners in SRL, not having enough opportunity for cooperative learning.

These concerns may be justified in that SRL requires skills in self-management and goal setting which need to be developed in students and implemented prior to and alongside programs in teacher education.

## **7. Discussion: self-regulated learning in teacher education**

Teacher education can play a major role in developing SRL competence in student teachers, by increasing opportunities for directing one's own learning, being receptive to inquiry, and challenging one's own ideas to construct new knowledge. Hence, the need to elaborate on central questions that can guide the development of teacher education programmes and facilitate SRL. A central question requiring elaboration is: can teacher education programmes rely on concepts of self-regulation to guide curricula, and which different demands does self-regulation impose on knowledge building and professional development? This general and rather broad question comprises a number of more specific ones:

- The first question is how to develop self-regulated learning strategies while strengthening reflection and flexible application of new ideas and knowledge. This implies the need for a learning environment that ensures multiple perspectives and an exchange of ideas (Skager, 1984; Wallace, 1995).
- Another question to be dealt with in teacher education programmes is how to use SRL competence to stimulate the sharing of educational and professional values. Dialogue among professionals is a major route for explicating tacit

knowledge (Eraut, 1994; Darling-Hammond, 1996). Thus, sharing the richness of biographical and case-based knowledge and communication and exchange of ideas are important in professional development (Goodson & Hargreaves, 1995). SRL may well facilitate the process of making the tacit explicit.

- A third question addresses the need for coherence in the programme activities, such as how to search for multiple dimensions in learning about a topic (Börger & Tillema, 1996; Spiro, 1990) and how to acquire flexibility in dealing with the learning needs of student teachers.

Dealing with and answering these questions—especially the way they are viewed by teacher educators and student teachers—might turn self-regulated learning into a hallmark of professional education (Eraut, 1994) and facilitate the exchange of ideas, beliefs and conceptions among professionals (Gilroy, 1993).

In view of the study results we propose that teacher education programs design formats and methods to implement SRL. An example may be self-directed study teams (Tillema, 1997), in which students select relevant tasks for study and investigate or study problems through reflective and collaborative inquiry to find tangible solutions for their practice. This instructional format has yielded favorable results with respect to meta-cognitive awareness and conceptual change in student teacher learning (Brooks, 1994). The format builds on elicitation of implicit and tacit knowledge as an important feature in opening lines of communication regarding beliefs and knowledge to be shared between study team members (Guskey & Huberman, 1995). External help is provided to support the study teams by teacher educators in scaffolding the process of knowledge generation. Flexibility and autonomy in learning are guaranteed by varying perspectives from different members; monitoring and awareness are achieved by challenging and testing solutions for different purposes. This instructional format can serve as an example of the search for new SRL approaches in the design of programs in teacher education (Huberman, 1995). Following the recent criticism of teacher education the time has come to design such methods and

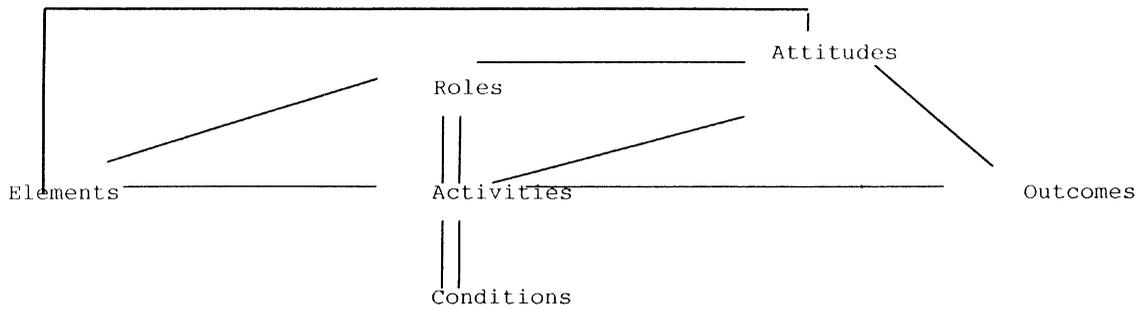


Fig. 1. Model to guide planning and evaluation efforts in SRL.

approaches. In designing teacher education programs in reference with SRL the following proposition may well be considered:

A relatively ideal situation calls for congruence between the defining elements of SRL, the conditions for its implementation, the implemented activities and the outcomes as a chain reaction. For instance, the conditions should be organized so as to facilitate the implementation of SRL elements, the activities should be planned and carried out in relation to the elements, and, finally, the anticipated outcomes might be expected to correspond with the aforementioned aspects of SRL. The roles of teacher educators and student teachers would be to follow this chain reaction and to pursue its realization. As a conceptual frame of reference we propose a model which can serve both practitioners and researchers in following-up, investigating and reflecting upon SRL implementation programs and guide planning and evaluation efforts.

This model traces, through its arrows, the route from SRL-defining elements to the outcomes, via a number of possible paths. As such, this path model may well serve as guidelines to both researchers and practitioners (Fig. 1).

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