South African Journal of Education

Vol 27(1)37–52

Effective teaching: linking teaching to learning functions

Mary Grösser
opwmmg@puknet.puk.ac.za

The quest for effective teaching remains a demanding, complex and daunting task. In spite of the wealth of research evidence on the nature of effective and ineffective teaching, there are still problems about spelling out what effective teaching really is. Most research efforts aim at investigating teacher effectiveness by probing the following dimensions: special characteristics of the teacher, which include cognitive dimensions, personality dimensions, perceptions of self and others, instructional procedures and interaction styles. An important aspect emanating from the last is the fact that teachers are the ones who contribute most to the educational enterprise and therefore need to ensure that the learner is engaged appropriately with the instructional material. In this regard, it is important that teachers are able to link teaching to learning functions in order to facilitate the optimal realization of learning outcomes. In this study the extent to which teaching assists the development of learning functions was examined by means of a quantitative research project. The findings indicated that, at present, teachers did not link their teaching to learning functions. Recommendations are made to improve the situation.

Introduction

Too often the ineffectiveness of teacher instruction is not regarded as influential in ineffective learning (Nuthall, 2004:278). Within the professional culture of teaching it is commonly believed that if something is taught it is automatically learned. If it is not learned, then the problem is presumed to lie with the inadequacy of the learner's ability, motivation or persistence (Nuthall, 2004:278). Arguments like these clearly indicate that teaching and learning are seen as separate entities.

In addition to this, most research efforts aim at investigating teacher effectiveness by probing the following teacher-related dimensions: special characteristics of the teacher, perceptions of self and others, and instructional procedures and interaction styles. The research efforts of Harrison, Douglas and Burdsal (2004:313), Bell and Robinson (2004:1-6), Howes, James and Ritchie (2003:105), Kemp and O'Keefe (2003:111-114), Biddulph and Adey (2002:6), Buskist (2002:191), Novak (2001:549-565) and Munro (1999:191) aim at investigating teacher effectiveness by examining, among other things, the following dimensions:

- Teachers' involvement with learners
- Teachers' enthusiasm
- Teachers' subject knowledge
- Teachers' engagement in elaborate conversation with learners
- Facilitation of learning activities with material
- Attention to requests for attention and help
- Teachers' reflection on own practice

- Encouragement of learners to be active participants in the learning process
- Assistance to learners to reach their intellectual potential

Jones, Palinscar, Ogle and Carr (1987:4) argue that any discussion regarding effective teaching should take not only the above into account, but also the propositions about how learners learn, as this has a critical impact on the planning of instruction. The diagram in Figure 1 explains this argument.

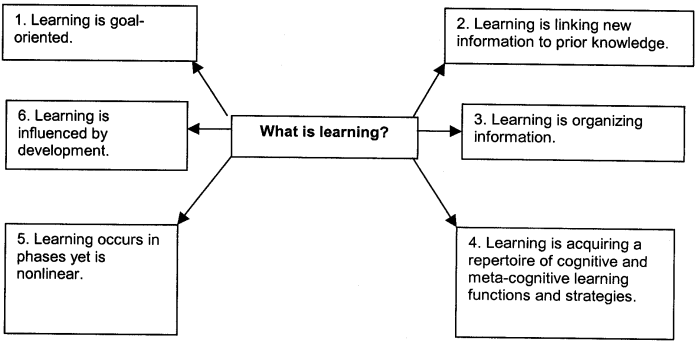

Figure 1 Assumptions about learning

Figure 1 indicates the connectedness of teaching and learning. It is clear that teaching and learning cannot be dealt with as separate entities and that the relationship between teaching and learning is rather complex (Mayer, 2002:228-232; Oser & Baeriswyl, 2001:1031; Munro, 1999:151; Shuell & Moran, 1994:3343). The diagram clearly indicates the important role of the teacher in developing certain learning functions to assist the learner in the learning process and in the optimal realisation of learning outcomes. These learning functions refer to the following: how to link new information to prior knowledge, how to organize information, and how to acquire cognitive and metacognitive learning functions.

An important aspect emanating from the above argument is the fact that the teacher should contribute to the educational enterprise by ensuring that the learner is appropriately equipped with the necessary learning functions in order to engage with the learning material in a meaningful way. In this regard, an important teacher function is to identify and analyse thoroughly those functions executed by learners when they try to make sense of and learn from teaching, and to assist learners in acquiring and executing these functions (Mayer, 2002:228).

The problem question emanating from the above which this article addresses is:

To what extent are teachers assisting learners to acquire the learning functions needed for effective learning?

Linking teaching with learning functions

The foregoing discussion emphasises the fact that a teacher must teach not only content to learners, but also the functions required by the engagement with that content in order to make learning effective, meaningful, integrated and transferable (Horton, 1988:79). The role of the teacher is that of both planner and mediator of learning. The teacher must know what functions learners will require to learn specific content and how learners can acquire these functions. Horton (1988:79) argues that the teacher becomes a strategist who constantly makes decisions about the substance of instruction, about particular procedures needed to acquire a function, and about the conditions under which it is appropriate to apply a given function. In order that teachers succeed in linking their teaching to learning functions, Ogle (1989:48) and Jones *et al.* (1987:35) designed a planning framework for establishing this essential link between teaching and learning in the routines of teachers.

The elements of the framework address the following procedures for teaching:

1. Teachers should think and make strategic decisions about teaching and learning. This involves the processes as indicated in Figure 2:

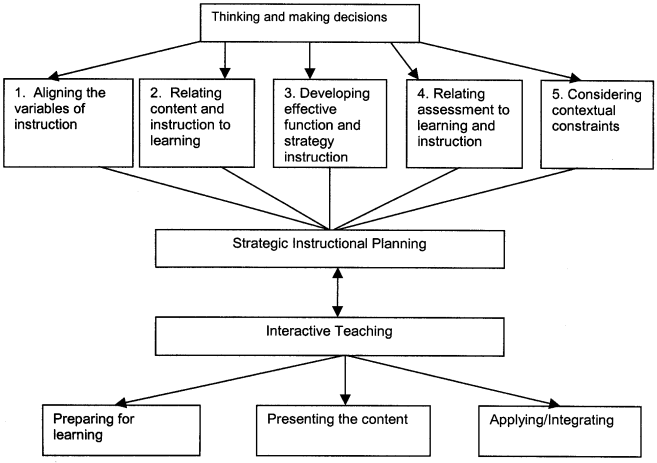

Figure 2 Procedures for linking teaching to learning

- Aligning the variables of instruction

This includes identifying the characteristics of learners, the learning material, the learning outcomes and the learning functions and learning strategies needed for effective learning. According to Jones *et al.* (1987:14), learning functions refer to mental activities that need to be applied to learning tasks, whereas learning strategies refer to behaviour and thoughts that a learner engages during learning and that are intended to influence the learner's encoding of information.

In this regard, Mayer (2002:228), Munro (1999:151), and Shuell and Moran (quoted by Husen & Postlethwaite, 1994:3342-3343) identify the learning functions, indicated in Table 1, which are relevant to different types of learning.

These learning functions provide the cognitive basis of learning and ensure that the learner is an active processor of information (Prawat, 1992:354). Linking teaching to these learning functions will enable teachers to reach the ideals with outcomes-based education, namely, a learner who is confident, independent and active, and can reflect on and explore a variety of learning strategies to learn more effectively (DoE, 2002:11).

The above-named functions refer to cognitive and metacognitive functions in which learners should engage in order to make learning effective and meaningful (Mayer, 2002:227). Many of these functions are critical across content areas. These critical or core functions include the following: expectations, activation of prior knowledge, motivation, attention, encoding, planning, monitoring, evaluation and the interpretation of feedback. All the other functions are related to a specific engagement with the learning content. These functions go beyond remembering and retrieving information from the long term memory and move learning from being rote to being more meaningful. Teachers should assist learners in acquiring these functions. To foster effective and meaningful learning, teachers need to emphasise the cognitive and metacognitive functions and processes that go beyond remembering and also assist learners in acquiring these. When meaningful learning becomes the goal, remembering becomes a means to an end, rather than an end in itself. The focus is on transfer of knowledge and the cognitive processes of understanding (Mayer, 2002:228).

- Relating content and instruction to learning

This implies relating the new learning content to the prior knowledge of the learner and to the type of organization pattern needed for instruction.

- Developing effective learning functions and strategy instruction

The teacher needs to develop a procedure according to which the learners will acquire these learning functions.

- Relating assessment to learning and instruction

This involves the specification of assessment standards and assessment criteria.

Table 1 Learning and teaching functions (Shuell & Moran, 1994)

Learning functions	Teaching functions
Expectations	Learners need to have a general idea of what is to be accomplished from the learning task. Providing an overview or the learner identifying the purpose of a lesson are ways in which expectations can be initiated
Motivation	Learner persistence and contribution need to be nurtured
Prior knowledge activation	Reminding students of prerequisite information or asking oneself what is already known about the topic being learned
Attention	Enabling learners to focus on relevant information, disregarding the irrelevant information
Encoding	Assisting learners to add personal meaning to new information
Comparison	Making comparisons in searching for similarities and differences that permit the formation of higher-order relationships characteristic of understanding
Hypothesis generation	Encouraging learners to try alternate courses of action or generating alternative solutions
Repetition	The inducement of multiple perspectives and engaging in systematic reviews are two ways in which this function can be initiated
Feedback	Learners need to interpret feedback on the adequacy and accuracy of their understanding.
Evaluation	Providing learners with the opportunity to interpret and evaluate the feedback, as well as the opportunity to evaluate their own work against set criteria and standards
Monitoring	Providing learners with the opportunity to monitor their own learning progress, to determine if reasonable progress is being made
Combination, integration, synthesis	Isolated pieces of information must be combined in ways that permit integration and synthesis. Developing organizational schemes such as tables and diagrams are examples of how this function can be initiated.
Interpreting	Assisting learners in converting information from one form of representation to another
Exemplifying	Motivating learners to illustrate by making use of new examples
Classifying	Enabling learners to determine categories of concepts
Summarizing	Guiding learners in writing short statements that represent information
Inferring	Assisting learners to draw conclusions from presented information
Explaining	Guiding learners in constructing mentally and using cause-and-effect models
Applying	Teaching learners how to utilise procedures to perform exercises or solve problems
Analysing	Guiding learners to break material into constituent parts and to determine how the parts are related
Planning	Assisting learners in devising methods for accomplishing tasks
Producing and constructing	Guiding learners to invent a product

- Considering contextual constraints

This implies checking text and resource material to determine if vocabulary and other text features will pose problems for readers. Class size and learner ability are also factors that can impact on the effectiveness of teaching.

2. The framework involves interactive teaching. Teachers plan the actual sequence of instruction, using the three phases of preparation, presentation and application.

For the purposes of this article, it was decided to focus on three metacognitive learning functions, namely, planning, monitoring, and evaluation. These three functions are referred to as the reflective learning functions and play an extremely important part in the new outcomes-based curriculum.

The reflective functions and learning

The execution of the reflective functions is not only essential for all learning, but the functions are also central to the type of learner that Curriculum 2005 and the National Curriculum Statement envisage, namely, an independent and confident lifelong learner (DoE, 2002:8).

Reflection during learning comprises two categories, namely, reflection on practice and reflection in practice (Schon, 1987). Reflection on practice refers to making sense of past learning experiences for the purpose of orienting oneself toward current and/or future actions or thought. Reflection in practice refers to the managing of the learning process (planning, monitoring and evaluating) while it is taking place, and constantly adjusting and changing it (Ertmer & Newby, 1996:11-13).

Planning

Planning involves cognitive, motivational and environmental considerations regarding the following: setting a clear goal, selecting and sequencing strategies and/or procedures toward achieving the goal, determining whether the task requires a great deal of concentration and effort, and identifying potential obstacles to the successful attainment of the goal.

Monitoring

Monitoring also involves cognitive, motivational and environmental considerations. This refers, *inter alia*, to the following: an awareness of what one is doing, an understanding of where the task fits into the established sequence of steps, an awareness of whether the task is retaining the interest and attention and whether the learning environment is supportive enough.

Evaluation

Evaluation involves an assessment of both the process and the product after completion of a learning task in order to make modifications prior to using it with similar tasks in future. Cognitive, motivational as well as environmental

considerations are involved, namely, to determine whether the strategies utilised during learning worked, whether the task was enjoyable and motivational, and whether unexpected obstacles were remedied.

The focus in this article will be on reflection in practice. Given the discussion undertaken so far, it is clear that teaching quality affects student learning. Thoughtful classroom teachers need to recognize that teaching and learning form a continuous loop. It was found necessary in the study to examine whether teachers were actually assisting learners to acquire the reflective learning functions necessary to make learning effective and meaningful.

Aims of the study

A preliminary study, exploratory in nature, was conducted to determine the extent to which teachers were assisting learners to acquire the reflective learning functions needed for effective learning. The aim could be operationalised as follows:

- By identifying and analysing the learning functions which learners use when they learn from teaching;
- by elucidating the perceptions of teachers in order to determine to what extent teachers assist learners to acquire the reflective learning functions needed for effective learning; and
- by making recommendations on how to enable teachers to assist learners in acquiring the reflective learning functions needed for effective learning.

Methodology

Literature study

The information gathered from primary and secondary sources was utilised to determine the learning functions which learners used when they learned from instruction, as well as what teachers could do to initiate these functions. Subsequently, a questionnaire was constructed to determine the perceptions of educators with regard to the extent to which they assisted learners to acquire the reflective learning functions needed for effective learning.

Empirical research

The empirical investigation, quantitative in nature, was conducted to determine to what extent teachers assisted learners in acquiring the reflective learning functions needed for effective learning. The intent was to establish the relationship between teaching and learning objectively and to develop possible generalisations that contributed to theory. The external validity of the research was supported by the fact that the study took place in a real-life setting.

Questionnaire

Based on the information gathered through a literature study, a questionnaire was designed. The questionnaire comprised 28 questions. The questions were grouped into three main categories to correspond with the reflective functions, according to Ertmer and Newby (1996:11-20), namely:

- Questions 1–12: Planning
- Questions 13–21: Monitoring
- Questions 22–30: Evaluation

The various questions following each category intended to break down the reflective function into clearly defined actions that teachers needed to take on a regular basis in order to develop these functions.

All the teachers involved in the research were requested to answer all the questions which focused on the extent to which they assisted learners in acquiring the three reflective learning functions.

Population and sample

The research was conducted in the D7 district (Vereeniging, Meyerton and Sharpeville) of the Gauteng Department of Education, and involved a randomly selected sample comprising the following respondents:

- schools (n = 3)
- teachers (n = 82)

Pilot testing

Pilot testing of the questionnaire was done with a selected group of respondents from the population (50 teachers) to determine its quality of measurement and appropriateness, and to review it for clarity. A Cronbach Alpha test was utilized to determine the reliability of the questionnaire before it was administered. The calculated value (0.973) indicated that the questionnaire complied with reliability criteria.

Validity was arrived at by considering content validity and construct validity. Content validity was arrived at by the fact that the specific items in the questionnaire were constructed strictly according to the prerequisites of nurturing the reflective functions of planning, monitoring and evaluation (Ertmer & Newby, 1996:11-20).

The construct validity was supported by the fact that the questionnaire measured a characteristic that could not be directly observed, but had to be inferred from patterns of behaviour. The teaching of the reflective functions could not be observed and measured directly. Answering questions regarding the way their teaching was conducted would provide an indication of the extent to which teachers addressed learning functions during their teaching.

Statistical techniques

The Statistical Consultancy Services of the North-West University, Vaal Triangle Campus was approached for assistance in the analysis and interpretation of the data collected.

Descriptive statistics were utilized to analyse the data gathered from the questionnaires. Frequencies and percentages were calculated for the various responses in order to determine the extent to which the teachers assisted the learners to acquire the reflective learning functions.

Data analysis and interpretation

Questionnaires

Interpretation of the responses focused on the three categories of reflective learning functions, namely:

- Planning
- Monitoring
- Evaluation

The results (excluding the "no" responses) were noted for the perceptions of the total sample regarding the extent to which teachers were assisting learners in acquiring the reflective learning functions necessary for effective learning. Teachers had to indicate on a scale (always, often, sometimes, never) how regularly they assisted learners and provided them with the opportunity to develop these functions.

Planning

It was clear (see Table 2) that an increased awareness of the importance of specifically the motivational and environmental aspects of planning was necessary. It appeared that learners were more capable of reflecting on the cognitive aspects which concerned the goals, strategies and prior knowledge for learning. It could be concluded that learners needed more practice in being effective in anticipatory planning. This would serve three important purposes: it would ease the execution of the task, it would increase the likelihood of successfully accomplishing the task, and it would increase the delivery of a product of quality.

Monitoring

It was evident (see Table 3) that an increased awareness of the importance of the cognitive, motivational and environmental aspects of monitoring was necessary. It appeared that learners were not capable of determining whether they were making progress or not and, least of all, of saying how to improve on progress that was not acceptable. The results also indicated that learners lacked the skill to determine the supportiveness of their learning environment.

It is important that educators do more to assist learners in becoming more confident with monitoring. The results implied that the learners were not able to look backward at their plans of action to determine if the steps were performed in the correct order or to look forward to the steps still to be performed. Furthermore, it was implied that the learners were not able to determine whether they were making progress toward the specified goal or not.

Evaluation

The reflective function of evaluation was necessary to determine how effective the goal achievement was in order to modify plans if necessary before their use with similar tasks in future. According to the results, the learners were not equipped adequately to reflect on the outcomes of a task. Reflection, specifically with regard to motivational levels, feelings about the outcome of a

Table 2 Frequency distributions and percentages for the extent to which teachers assisted learners to acquire the learning function of planning

		Al-ways	%	Often	%	Some-times	%	Never	%
Cognitive:									
1.	What is the purpose of this task/lesson?	28	34.14	25	30.48	12	14.63	14	17.07
2.	What strategies are most effective in this type of task?	11	13.41	33	40.24	25	30.48	10	12.19
3.	What do I know about this topic/task?	19	23.17	30	36.58	25	30.48	6	7.31
4.	Do I understand what I have to do?	21	25.60	27	32.92	23	28.04	7	8.53
5.	Are the strategies I have chosen working with this task?	14	17.07	30	36.58	24	29.26	13	15.85
6.	What useful skills do I have in order to complete this task successfully?	16	19.51	34	41.46	19	23.17	9	10.97
Motivational:									
7.	Does this task require a great deal of concentration and effort?	19	23.17	23	28.04	24	29.26	12	14.63
8.	Do I like this kind of work?	10	12.19	24	29.26	33	40.24	13	15.85
Environmental:									
9.	What kind of study conditions are best for meeting the requirements of this task?	14	17.07	16	19.51	31	37.80	19	23.17
10.	When do I study best?	8	9.75	22	26.82	30	36.58	18	21.95
11.	Where do I study best?	7	8.53	24	29.26	30	36.58	17	20.73
12.	Is the chosen time and place available for the task?	14	17.07	24	29.26	26	31.70	16	19.51

Table 3 Frequency distributions and percentages for the extent to which teachers assisted learners to acquire the learning function of monitoring

	Al-ways	%	Often	%	Some-times	%	Never	%
Cognitive:								
13. Am I making progress or not?	14	17.07	31	37.80	26	31.70	9	10.97
14. I am not making progress,. What am I doing wrong?	12	14.63	27	32.92	24	29.26	17	20.73
15. How can I improve?	14	17.07	30	36.58	25	30.48	11	13.41
Motivational:								
16. Is this task captivating my attention?	12	14.63	26	31.70	31	37.80	12	14.63
17. Is this an interesting lesson/topic to me?	17	20.73	24	29.26	29	35.36	10	12.19
18. Am I confident in working on this task?	10	12.19	27	32.92	26	31.70	17	20.73
Environmental:								
19. How supportive is my learning environment in completion of the task?	10	12.19	26	31.70	31	37.80	14	17.07
20. What outside materials or resources should be added to complete the task?	24	29.26	29	35.36	21	25.60	6	7.31
21. Do I have enough time to complete the task?	31	37.80	26	31.70	15	18.29	9	10.97

task, and solving of problems that occurred during the completion of the task seemed to be problematic to the learners. This function was extremely important in determining how effective the goal achievement was in order to modify plans before their use with similar tasks in future.

Although the results (see Table 4) indicated that learners were executing reflective functions to some extent, an overall improvement regarding all three categories of these functions was necessary. It was evident that learners were still novices in applying reflective learning functions, because it seemed that teaching and learning were still regarded as separate entities in the classroom.

Table 4 Frequency distributions and percentages for the extent to which teachers assisted learners to acquire the learning function of evaluating

	Al-ways	%	Often	%	Some-times	%	Never	%
Cognitive:								
22. Did I achieve the outcome of the task?	22	26.82	27	32.92	21	25.60	10	12.19
23. What did I learn about this topic/task?	20	24.39	28	34.14	22	26.82	9	10.97
24. What new goals do I have now?	11	13.41	28	34.14	21	25.60	19	23.17
Motivational:								
25. Did I enjoy this task?	18	21.95	22	26.82	28	34.14	12	14.63
26. How do I feel about the result of the task?	16	19.51	33	40.24	21	25.60	8	9.75
27. Was I motivated the whole time during the completion of the task?	8	9.75	25	30.48	37	32.92	10	12.19
28. Did I stay motivated?	9	10.97	21	25.60	32	39.02	17	20.73
Environmental:								
29. What obstacles/ problems did I encounter during the completion of the task?	11	13.41	28	34.14	29	35.36	10	12.19
30. Did I solve my problems?	13	15.85	30	36.58	25	30.48	11	13.41

Recommendations

How does a learner acquire the reflective learning functions? This does not happen by listening or reading only. The functions become habits through their use. Learners should receive explicit instruction in the use of these functions. Educators must make time for them, guide learners while they become comfortable with them. The likelihood of learning and the quality of the learning outcome are determined by teachers through the selective and systematic use of a range of teaching procedures to activate these learning functions (Munro, 1999:152).

There is some agreement that learners learn best when the learning functions progress from being teacher-directed, with a strong emphasis on modelling and guided practice, to being learner-directed, involving independent learning and application in content areas (Munro, 1999:152; Jones *et al.*, 1987:16).

Risko, Vukelich and Roskos (2002:139-140) propose a combination of two models that could be utilised by teachers during teaching. The monologue reflection model makes learners aware of the different questions they need to ask during the different stages of the learning process. An example of a monologue reflection model is provided in Table 5.

Table 5 Sample questions a learner may ask during the three stages of the learning process (adapted from Ertmer & Newby, 1996:20)

PLAN
Cognitive
• What is the goal of the lesson?
• What strategies are most effective in this type of task?
• What do I know about this topic/task?
• What useful skills do I have?
Motivational
• Does this task require a great deal of concentration and effort?
• How do I feel about this kind of task? Do I like this kind of work?
Environmental
• What kind of study conditions are the best for meeting the requirements of this task?
• When and where do I study best? Is the time and place available for this task?
MONITOR
Cognitive
• Are the strategies I have chosen effective for this task?
• Do I understand what I am doing? Am I making progress toward the goal?
Motivational
• Is this task retaining my attention? Is this an interesting lesson/topic?
• How am I feeling about working on this task? What is my level of confidence?
Environmental
• How supportive is the learning environment? Do I need to find a new place to work?
• What resources should be added?
• Am I giving myself the time I need?
EVALUATION
Cognitive
• How well did my approach work? What did I do when strategies did not work?
• How could I improve this approach?
• Did I achieve the goal? What did I learn? What new goals do I have?
Motivational
• How much effort was required to complete the task?
• How did I stay motivated?
• How do I feel about the outcome?
• Did I enjoy this work?
Environmental
• Did I encounter unexpected obstacles in completing the task?
• How did I remedy problems?
• How well did I arrange my study environment? Did I choose a good time and place to study?

Although the monologue reflection model provides a structural framework for individual thinking, it may lead to a dependence on the educator's think-

ing and less on the learner's personal voice (Risko *et al.*, 2002:139). As soon as learners get acquainted with the process of reflection, reflection should also be viewed as a social activity in which dialogue reflection with peers and/or the educator takes place (Risko *et al.*, 2002:140). This could take place in the form of individual conferences, informal conversations or class discussions. Interacting with others can lead to more in-depth consideration and penetrating ideas. It can influence the building of argumentation and the analysis of different perspectives.

Conclusion

Although limited in scope and exploratory in nature, there are a few key messages that emerged from this study.

When the results are examined, the importance of facilitating reflective functions is evident. These functions need to be developed as the execution thereof promotes quality of learning. These functions encourage learner motivation, willingness and confidence. They promote reflection on the process of learning, which is believed to be an essential ingredient in the development of expert learners, who are strategic, self-regulated and reflective (Ertmer & Newby, 1996:1).

It is agreed that teaching must go beyond memorization, conditioning and repetition, and that the powerful implications of reflection have to be explored. If learners only experience teaching as a process expecting of them to focus on fixed predetermined procedures of recollection and reproduction, then the aim of education is defeated (Kotze, 2002:78). There is a need to expand teaching practices to become more developmental and to encourage a kind of self-reflection and perceptual shift that define higher orders of consciousness.

Teachers must take note of the powerful implications of the reflective functions during teaching and learning. Acquisition of the reflective functions has many potential benefits for learning, as indicated by Kish (1997). Firstly, it enables learners to determine why they learn or fail to learn, what skills they have acquired, and what they have yet to acquire to progress further. Secondly, it allows examining of socio-cultural influences and factors that influence personality development. The benefit of witnessing one's own progress is to develop positive attributions of learning, which later develop into self-esteem and positive socio-emotional growth. Thirdly, it can promote personal growth by having learners reflect on their own current knowledge, as well as alternative viewpoints to deepen that knowledge. It is important to strive to attain these critical benefits.

Important implications for staff development and educator training can be drawn from this research. Becoming a strategic teacher, one who can link teaching and learning, is demanding. Teachers must know their subject matter thoroughly, they must have a solid understanding of how learning takes place in their disciplines, and they must possess the skills to choreograph an effective match between learning content and learning functions

(Ogle, 1989:47). Teachers need training in the theoretical base for strategic teaching, and must learn specific strategies and observe demonstration lessons on how to link their teaching to learning. To teach the reflective learning functions, educators need to be equipped to become reflective themselves. Scanlan and Chernomas (1997:1141) indicate that this implies thinking about their own teaching, modelling reflective thinking strategies in the classroom, and using specific strategies that encourage learners to be reflective.

New ways of teaching will not automatically improve the quality of learning. If educators are being asked to make fundamental changes to their teaching practices, they will also need sustained support, encouragement, assistance, recognition and reward for their efforts (Ogle, 1989:60). Acknowledgement from management, as well as support from peers are key factors in the process. For Ogle (1989:60), the most gratifying reward is to see learners become more active and strategic learners themselves.

An effective teacher is the single most important school-related factor responsible for learning (Schacter & Thum, 2004:413). If educators are going to assist learners to become effective, the reflective functions have to be acknowledged and cultivated. The goal of teaching then becomes one of transferring the initiation and regulation of the learning process from the educators to the learner him/herself. Through effort and application, educators can enable learners to become the type of learner that Curriculum 2005 and the National Curriculum Statement envisage: an independent and confident lifelong learner.

References

Bell C & Robinson N 2004. The Successful Student-Teaching Experience: Thoughts from the Ivory Tower. *Music Educators Journal*, 91:1-6.

Biddulph M & Adey K 2002. Pupils Perceptions of Effective Teaching and Subject Relevance in History and Geography at Key Stage 3. *Research in Education*, 71:1-8.

Buskist W 2002. Effective Teaching:Perspectives and Insights from Division Two's 2 and 4 year Awardees. *Teaching of Psychology*, 29:188-192.

Department of Education. (DoE) see SOUTH AFRICA.

Ertmer PA & Newby TJ 1996. The Expert Learner: Strategic, Self-regulated and Reflective. *Instructional Science*, 24:1-24.

Harrison PD, Douglas DK & Burdsal C 2004. The Relative Merits of Different Types of Overall Evaluations of Teaching Effectiveness. *Research in Higher Education*, 45:311-322.

Horton L 1988. A Workable and Sensible Way to View Instruction. *Phi Delta Kappan*, 70:79-80.

Howes C, James J & Ritchie S 2003. Pathways to Effective Teaching. *Early Childhood Research Quarterly*, 18:104-120.

Jones BF, Palinscar AS, Ogle DS & Carr EG (eds) 1987. *Strategic Teaching and Learning : Cognitive Instruction in the Content Areas*. Alexandria, VA: ASCD (Association for Supervision and Curriculum Development.)

Kemp PR & O'Keefe RD 2003. Improving Teaching Effectiveness. *College Training,*

51:111-114.
Kish CK 1997. Portfolios in the Classroom:A Vehicle for Developing Reflective Thinking. *High School Journal*, 80:254-260.
Kotze GS 2002. Issues Related to Adapting Assessment Practices. *South African Journal of Education*, 22:76-80.
Mayer RE 2002. Rote versus Meaningful Learning. *Theory into Practice*, 41:226-232.
Munro J 1999. Learning more about Learning Improves Teacher Effectiveness. *School Effectiveness and Improvement*, 10:151-171.
Novak JD 2001. *Meaningful Learning: The Essential Factor for Conceptual Change in Limited or Inappropriate Propositional Hierarchies Leading to Empowerment of Learners*. Willy Periodicals Inc.
Nuthall G 2004. Relating Class Room Teaching to Student Learning : A Critical Analysis of why Research has Failed to Bridge the Theory-Practice Gap. *Harvard Educational Review*, 74:273-306.
Ogle DM 1989. Implementing Strategic Teaching. *Educational Leadership*, 46:46-60.
Oser FK & Baeriswyl FJ 2001. Choreographies of teaching : Bridging Instruction to Learning. In: Richardson V (ed.). *Handbook of Research on Teaching*. 4th edn. Washington: American Educational Research Association.
Prawat RS 1992. Teachers' Beliefs about Teaching and Learning: A Constructivist Perspective. *American Journal of Education*, 100:354:395.
Risko VJ, Vukelich C & Roskos K 2002. Preparing Teachers for Reflective Practice: Intentions, Contradictions and Possibilities. *Language Arts*, 80:134:144.
Scanlan JM & Chernomas WM 1997. Developing the Reflective Teacher. *Journal of Advanced Nursing*, 25:1138-1143.
Schacter J & Thum YM 2004. Paying for High-and-Low-quality Teaching. *Economics of Education Review*, 23:411-430.
Schon DA 1987. *Educating the Reflective Practitioner*. San Francisco: Jossey Bass.
Shuell TJ 1992. Designing Instructional Computing Systems for Meaningful Learning. In: Jones M & Winne PH (eds). *Adaptive Learning Environments: Foundations and Frontiers*. New York: Springer Verlag.
Shuell TJ & Moran KA 1994. Learning Theories: Historical Overview and Trends. In: Husen T & Postlethwaite TN (eds). *International Encyclopedia of Education*. 2nd edn. New York: Pergamon.
South Africa Department of Education. 2002. *Revised National Curriculum Statement. Grades R-9 (Schools) Policy. Overview*. Pretoria: Department of Education.

Mary Grösser is Senior Lecturer in the School of Educational Sciences at the North-West University, Vaal Triangle Campus. Her research interests include the improvement of critical thinking abilities among prospctive teachers and the improvement of teaching practices by accommodating diverse learning styles.