

The quest to turn on the taps in constructive assessment

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In a globally interdependent world, educators are charged with preparing learners for this complex, interactive world. Many research efforts stress that radical improvement regarding abilities is necessary because a critical shortfall of particular skills and abilities in learners leaving school, which is a significant constraint in economic growth. This educational challenge requires educators to develop learners with critical, creative and conceptual minds, but still to teach the required content. Therefore developing the individual learner's ability to construct his or her own meaning for new concepts is a prerequisite for the classroom. So is the development of the learner's ability to solve increasingly complex problems in the learning area as well as in daily life. This revivifies the question of how to plan, structure and assess in order to accommodate these requirements while enhancing learner abilities and achievement. Assessment - as an integral part of planning and actual instruction - then needs constructively to reflect how significant understanding at the conceptual level can be fostered, how understanding can be transferred across time and situations and how the assessment presupposes the relation with prior knowledge and to identify the understanding of patterns and connections. (Words: 170)

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Introduction and background

In the early 1990s the shift from an industrial age to an information age, which required the ability to access, interpret, analyze, and use information for making decisions, was clearly stated in a document from the U.S. Department of Labor (June 1991:xvii-xviii). Eighteen years later (in 2008), this global trend to emphasize skills and competencies needed to succeed in the workplace has become increasingly evident. In various news clips in South African news papers, the previous Minister of Education argued that the matric examination question papers should reflect these specific abilities that are globally appropriate. She made it clear that matric (Grade 12) candidates should be able to demonstrate the cognitive skills related to problem-solving as well as extended writing skills. Christie (2008:41) explains in her book "Opening the doors of learning" that the challenges of globalization in the contemporary society are so different that they call for new understanding and more innovative theoretical approaches.

Erickson (2007:1) argues that in a globally interdependent world, the concept "complexity" frames the socio-political and environmental issues of the day and teachers are charged with preparing learners for this complex, interactive world. The reality of this educational challenge is then especially to foster the development of critical, creative and conceptually receptive minds in learners, but still to teach the required content. Pink, in his book "A Whole new mind: Moving from the Information Age to the Conceptual Age" (2005:1-69) highlights the increasing importance of creative thinking and the ability to construct one's own meaning to new concepts also by being able to solve increasingly complex problems in daily life. This creative thinking ability will almost certainly include metacognitive assessment of the thinking. This notion of metacognitive assessment reinforces the idea that assessment needs to reflect how significant understanding at the conceptual level can be established, how understanding can be transferred across time and situations and how the assessment presupposes the relation with prior knowledge in order to confirm the understanding of patterns and connections.

The idea that at the heart of every "modern" curriculum reform, is the notion of active learning which focuses on the provision of a platform for developing knowledge, skills and competencies for innovation, social development and economic growth, is central in the World Bank Working Paper, No 128 (2008:43-45). From the investigation done by the World Bank (as reported in World Bank Working Paper, No 128), the pedagogical idea behind active learning is to provide learners with the opportunity for active engagement with learning matter for them to construct knowledge themselves instead of reciting facts. Regarding planning and the choice of teaching strategies, it seems clearly that the underlying methodological principles which may lead to improved and adapted classroom

activities are centred around learner participation with the emphasis on holistic development, critical thinking and the integration of knowledge (World Bank, 2008:44).

The question now is how to plan, structure and assess to accommodate these requirements in the assessment of higher order skills, abilities and achievement in a world which demands this knowledge and these abilities.

The quest for facilitating the understanding of concepts

Changes in the skills and knowledge needed for new abilities and good performance, will have an effect on the understanding of how learners learn as well as the relationship between teaching and assessment. Bransford, Brown and Cocking (2000:37-42) are of opinion that a strong base of factual knowledge is important for thinking and problem-solving, but it is the ways in which such knowledge is mentally organized that makes the difference between real understanding and just the reciting of facts. There is a need to shift from the merely informative, if learners are to reach higher conceptual levels of understanding. Learners who have reached a higher conceptual level will not only grasp the critical factual knowledge, but also understand the generalisations and principles and can therefore apply these in new contexts. Consequently, to accommodate such a shift, teaching, learning and assessment should be seen as being in a triangular relationship where planning for teaching - and assessment practices - also has to change. It is therefore important to focus on how the organization of knowledge can be made more accessible to the learner to construct own understanding and then provide proof of understanding in the assessment process.

The organisation of knowledge and therefore the quest for understanding concepts is closely linked to whether “teaching” is done to bring about learning and understanding concepts. Through effective teaching suitable conditions are set for learning to take place, and this does not mean that teaching is confined to instructing and demonstrating because learners must acquire certain knowledge which differs from content and concepts. Learners should also acquire interpreting, analysing and application skills to be able to transfer and apply knowledge in new contexts. Egan (1998:28) argues that the purpose of “teaching” is to lay out a logical path that the mind of the developing learner can follow with maximum ease to ensure understanding and therefore to be able to create his or her own meaning in concepts.

Language is the most prominent mediating tool that shapes the understanding of new concepts. The teacher should acknowledge the importance of the effective use of language in the teaching-learning process to enable learners to more easily grasp particular concepts. Mediation of concepts happens most effectively through language, and through the interaction between learner and teacher, since, in the process of negotiating a common meaning, both learner and teacher will discover how each of them learns, what their assumptions are and how to best find meaning of new concepts and content.

In addition, learners find the challenge of coming to grips with new concepts much easier if their motivation levels are high. Motivation to learn grows from a close and connection between planned teaching and effective assessment. Many assessment practices, in particularly traditional multiple-choice and true-false assessments, test facts and skills in isolation, offer neither the opportunity nor the motivation to learn. The use of only standardized tests are most often demotivating, because over-reliance on this type of assessment often leads to instruction that stresses basic knowledge and skills.

As seen above, the quest for understanding concepts links to a process of identifying and structuring important knowledge and to prove own meaning to concepts through the application of knowledge and thinking skills in new contexts. The real understanding of concepts furthermore refers to the ability to find ways to structure and to transfer knowledge in order to develop what Anderson and Krathwohl (2001:42) call “deeper understanding”. Erikson (2007:38) explains the finding of “deeper understanding” as the process to shape a “conceptual mind” in order to reach the level where knowledge can be applied in a new assessed context.

It is therefore clear that only when they are understood, do concepts become transferable to new context, and it is only then that a true understanding of those concepts actually exists.

When thinking about how teaching can be planned and how to guide learners to the understanding of concepts, Feuerstein's work on the modification of knowledge comes to mind. Getting the grips of concepts requires a modification of understanding, which in turn leads to a higher cognitive level and ability, which in turn prepare the learner to take up higher demands and challenges in assessment tasks.

Mediated learning as preparation for assessment: The Feuerstein-model

Feuerstein presents the view that cognition is a variable; and that thinking patterns can change and consequently that intelligence is modifiable. He states that changes in "the state of the organism", can be brought about by a deliberate program of intervention, but only when "the organism" will be receptive and sensitive to internal and external sources of stimulation. In other words in a teaching-learning situation, the learner can learn to learn how to learn and has the capability of modifying the underlying structure of his or her cognition. Feuerstein calls this process through which the capacity to adapt to environments can be developed, "the mediated learning experience". In this mediated learning experience, language is pivotal for a learner to be able to broaden his or her understanding and to connect it with previous experiences and cultural background. In this way learners link diverse aspects of experience together in a meaningful way.

In the Feuerstein approach the teacher's main role is thus that of a mediator, whose task is to help the learner to learn, to grasp new concepts and reach a higher level of understanding. The task is not aimed at placing a specified body of knowledge into the learner's head. The mediator works with the learner in such a way that both of them discover how the learner (and the mediator) learns and how to improve the learner's learning process in such a way that proof of learning will be evident in the assessment process.

Feuerstein's theory of mediated learning argues that to a large extent the diversity in learner performance reflects the different needs for mediated learning and that meaningful learning and the development of new concepts cannot happen without mediation. Mediated learning differs from direct or experiential learning in that in the mediated learning experience there is the intervention of a human to filter the environment to the organism. Instead of the direct Stimulus – Response (S – R) of Skinner (as propounded in Behaviourism) or the Stimulus – Organism - Response (SOR) of Piaget), Feuerstein instead proposes a Stimulus – Human – Organism – Human – Response model (SHOHR). The mediator's intention according to the Feuerstein model is NOT to help the learner to solve the problem posed by the stimulus. It is rather to understand, with the learner, the process whereby the learner learns. The stimulus, in the form of a task (or assessment), is designed to make it possible for the two of them to investigate this process. According to Feuerstein's "Mediated Learning Experience", a learner is involved in a three-step learning process. In the first step the learner receives the stimulus which has been especially designed to make it possible for the learner and mediator to gain insights into the learning process. In the second stage the learner processes the information. In the third stage the learner decides upon a response, and is also assisted by the mediator. This means that the learner involves himself or herself intentionally in the learning process and to gradually develops a greater understanding of how best to learn. Furthermore it means that teacher involvement doesn't end at teaching, but stretches further into mediation in the assessment process as well.

To ensure a quality mediated learning experience, the teacher as mediator has to explicitly convey to the learner his or her intention to mediate, whereby the learner reciprocates by being metacognitively aware that he/she is learning. The process of learning has to be in the minds of both learner and teacher when teaching and assessment are planned. Learners should become as aware of the 'how' of their learning as they are of the 'what'. It's therefore important to note that intentionality and reciprocation is a vital two way street in the teaching-learning-assessment process which ought to result in true communication between teacher and learner as part of effective mediation.

Feuerstein argues that mediation of meaning occurs when the mediator communicates the importance and reason for an activity – only then a learner would get a holistic view on why he/she has to learn particular content. Without finding reason for dealing with particular content, being motivated and

has the courage to seek new skills to master, a learner most possibly will not take up a challenge to construct and reconstruct own meaning of concepts. Effective mediation means then that the teacher not only mediates particular meaning, but also encourages and conveys a feeling of competence to engage with the learning content or assessment task at hand. This further emphasises the interrelationship between motivation and whether actual learning will take place in the absence of true motivation .

The feelings of competence and belief can be strengthened through mediation to potentially solve new problems which derived from first-hand experience of mastery of problems in the past (previous knowledge). This may be more powerful than any external acknowledgement and motivation, because in this case a double-sided motivational process can develop. While learners become motivated through successful completion of (challenging) tasks, they gain even more confidence and motivation to embark on more complex challenges. This further implies that a motivated learner who has an improved understanding of own learning, may convey and explain own understanding much better and proves understanding of concepts much easier in assessment tasks. These ideas vivify the assumption that sustaining motivation to learn is also strongly dependent on the learner's confidence in his or her potential for learning.

Although mediation works effective teaching in hand, the learner should still be seen as a unique, complex and multidimensional individual with unique needs which are embedded in a particular cultural background. This takes mediation of learning into another dimension where the learner's individual understanding of concepts requires specific planning from the teacher, specific use of language and the choice of particular purposes of assessment.

The learner's individual understanding of concepts

Thoughts about the learner as an actively involved individual in the learning process, breaks away from the traditional receptive role the learner used to play. To further the thinking about the learner as individual, it becomes important that the teacher realizes that the learner brings along his or her background, culture or embedded worldview to the teaching learning environment. Although historical developments and symbol systems, such as language, logic, and mathematical systems, are inherited by the learner as a member of a particular culture and through time these becomes part of the learner, all can be utilized in the mediation process. Instead of seeing the learner's cultural background as burden to overcome, the use of these to provide the necessary context for effective mediation will help to shape the knowledge and truth that the learner creates, discovers and attains in the learning process. Even the social interaction with knowledgeable members of the society whereby social meaning of important symbol systems and learn how to utilize them, can be of worth as existing or prior knowledge that the teacher may include in a planned mediated learning experience.

Learners do not simply mirror and reflect what they read. Learners also have the ability to find regularity and order in events, text and content even in the absence of full or complete information; and that happens because learners use their backgrounds and prior knowledge to make sense of what they are involved in.

The teacher can plan teaching activities and assessment tasks in such a manner that learners with different skills and backgrounds collaborate in tasks and discussions in order to arrive at a shared understanding of the truth in a specific field. In such a way the learner in his or her uniqueness becomes the owner of own ideas and the independent master of own achievement, but share the understanding with others in the group. This is how a wealth of understanding is built and the learner most probably will find various substantiated alternatives as possible ways to deal with questions and answers to stated problems.

If a planned, mediated learning experience acknowledges the learner as individual, uses language most effectively as shaping tool in mediation and has as result a motivated learner encouraged enough to take up more complex challenges in the teaching-learning situation – the question still remains

what can then be identified as constructive purposes for assessment to follow through with the mediation process?

Constructive assessment purposes

The most common assessment purposes according to Borich and Tombari (2004:1&43,44) are to grade, sort, to promote, select or mere evaluate. But this is a far cry from the idea of mediation and the acknowledgment of the learner as individual or to include assessment as part of the mediation process. Thinking about the components to include in constructive assessment and which are essential to assess the learner's individual ability needs, will include explicitly set outcomes and criteria, the use of close-to-reality contexts; ideas about individual formative feedback and to foster through a mediation process the ability to self assessment.

So, to turn on the taps in constructive assessment needs a paradigm shift in the thinking about assessment. Assessment viewed as an integral part of the teaching-learning situation embedded in and through language and as opportunity to prove a modified and own understanding of knowledge, works constructiveness in hand. Assessment provides an opportunity to diagnose, guide and motivate through constructive, formative feedback in order for learning in and through assessment to take place. This doesn't mean that one assessment task can be used to fulfill all these purposes, but to identify in the teaching-learning-assessment process some problematic areas which gives the opportunity to support and could be used to follow up in future tasks and feedback to the learner.

The following purposes work constructive assessment in hand:

a) Assessment to diagnose

The use of assessment tasks to diagnose enables the teacher to adjust teaching to suit the current level of understanding, or to identify whether the learner has misunderstandings about particular concepts or lacks a particular skill in order to improve understanding. The results of diagnostic assessment infer the planning for teaching and assessment in finding answers to the "why", "what" and "how" questions of assessment. Therefore the teacher's explanation of the reasons for particular assessment tasks and the content and level of questioning associated therewith, is of core importance. This also implies that the teacher will find content specification ("what") for particular tasks easier and the format ("how") in which the assessment will be commanded becomes clear. To improve the effectiveness of assessment for diagnostic purposes, will require that the learners exactly understand the expectations in the task, otherwise the teacher won't be able to clearly identify and pinpoint the problematic areas.

A variety of tasks to find out where and with which particular content the learners are struggling, guides the teacher to the choice of teaching strategy or to change the teaching strategy used in particular situation to result in constructive and effective teaching and learning.

b) Assessment for guidance and motivation through constructive, formative feedback

Assessment that encourages learning fosters motivation by emphasising progress and achievement rather than failure. By giving positive feedback, teachers can use assessment to create a stimulating environment that encourages learners to learn, while guiding the learner's progress to own understanding of new concepts and content. This is possible when learners are given credit for what they can do, rather than being penalised for what they didn't master yet.

In order to use formative feedback effectively, the assessment associated therewith should not be seen as more frequent testing or as an informal assessment which actually limits the purpose of improving learning. Formative feedback should be seen as a process in which information about learning is evoked and used to modify the teacher as well as the learner's understanding of how and on what level learning took place. Therefore formative feedback needs to be specific, immediate and personally addressed to the learner as individual. It is therefore important that teachers should pinpoint the learner's strengths and advise on how to develop them, be clear and constructive about

any weaknesses; how these might be addressed in order to provide opportunities for learners to improve upon their work. Formative feedback especially becomes worthwhile when there is a positive impact on effective learning happens.

It may well take several feedback cycles to register an impact. The feedback should therefore be continuous and automatic to ensure a quicker impact on the teaching-learning situation. Formative feedback may take on different forms of which moving about the room and using a conversational approach, may well be needed to strengthen the understanding of written feedback. A conversational approach fits perfectly into the mediated learning experience which was referred to previously as to be part of the Feuerstein model.

The developmental nature of formative feedback is corrective by design, whereby teacher and learner can note what are completed successfully and correctly, but also to note what is still lacking in order to be able to complete successfully. Any improvement, however small, should be focused on direction and encouragement to all learners no matter what level or stage of the learning cycle they are at. This further strengthens assessment as to be part of a mediation process. Recognising the full range of achievements of all learners makes formative feedback to be constructive due to the motivational effect of such feedback which fires learners on to achieve their best. In such a manner, learners become self-motivated to learn even more and become better able to master the next step. In this way the learner turns into a strategic and effective learner.

Formative feedback also carries an evaluative character. Although either a numerical or alphabetical mark may be awarded to the work done, the reasons for awarding a particular mark should be part of the feedback which serves then as plan (guidance) for further improvement.

c) Assessment to improve self-reflection and reflection on learning

Where teacher and learner are working collaboratively, a meta-cognitive element of “I know what I’ve learned and why”, is of utmost importance. Teachers can promote learners’ meta-cognition (reviewing yourself how you learn), by guiding the learners to become more conscious of their learning skills by asking them to reflect on effectiveness, evaluate strategies, own understanding and particular skills.

To develop the ability to engage in self-reflection and to identify the next step in their learning, deepen the ability to seek out and gain new skills, new knowledge and new understandings. Teachers can equip learners with the desire and the capacity to take charge of their learning through developing the skill of self-assessment. Commencing with the assessment process by including an explanation and giving reasons why certain tasks are important and talk about links and goals will even encourage learners to get involved in self-assessment. In this sense self-reflection is encourage by mediation and encouragement to engage with the assessment task. Also the understanding of set criteria, the knowledge of how to apply a particular set of outcomes in answering questions and being able to value own work, develop learners' capacity for self-assessment so that they can become reflective and self-managing.

Teachers find it sometimes difficult to separate learning skills from the tasks and the things to be learned. On the other side it seems to be useful to stand for instance outside the reading process (language teaching) and thinking about strategies not only improves skills in reading, it also helps understanding the content.

d) Assessment for learning to take place

Assessment for learning involves a constructive integration of teaching, learning and assessment. In class this means using assessment as a basis for further learning, or to do informal assessment during group work or while the learners are busy with a project.

Small changes like the way how questions are formulated, the use of various levels of demand in questions and even an aspect like the “wait time” for verbally asked questions impact on performance and how effective assessment. Black et al (2003:33-42) mentions several points of improvement in learner performance if “wait time” is increased, namely that the learners answer with more confidence, the answers are longer and includes alternative explanations and some learners even improve the attempts of others. Although increasing “wait time” may seem difficult for teachers to apply due to the habitual desire to add something immediately after the answer is given, the ones who persevere in the efforts, come to see the value in the changed approach. The teacher who increase own “wait time” in responses to learners further provides the opportunity for sustained discussion in the classroom which also works learning in hand.

Teachers gain confidence in asking effective questions also by discussing and co-practice questions with colleagues and the learners. Effective questioning improves the quality of the task at large, but also encourages learners to give thoughtful answers and not simply agree or disagree with a statement. In such instances learners may struggle to justify their answer because they do not really understand what they agreed with. A question like:” Some people describe friction as the opposite of slipperiness. Do you agree or disagree?” was changed to “Some people describe friction as the opposite of slipperiness. What do you think?” which according to the research done by Black et al (2003:33-42) encourages learners to provide more substantiated full answers.

The following three aspects of assessment for learning need special reference:

- i. Assessment for learning should be part of constructive planning of teaching, learning and assessment

A teacher's planning should provide opportunities for both learner and teacher to obtain and use information about progress towards learning goals. It also has to be flexible to respond to initial and emerging ideas and skills. Planning should include strategies to ensure that learners understand the goals they are pursuing and the criteria that will be applied in assessing their work. How learners will receive feedback, how they will take part in assessing their learning and how they will be helped to make further progress should also be planned.

- ii. Assessment for learning should be recognised as central to general classroom practice

Tasks and questions which prompt learners to demonstrate their knowledge, understanding and skills are all part of assessment. The teacher observes and interpret what learners say and do during tasks, in order to judge how learning can be improved. These assessment processes are an essential part of everyday classroom practice and involve both teachers and learners in reflection, dialogue and decision making.

- iii. Assessment for learning should be sensitive, constructive and acknowledge the emotional impact of any assessment

Teachers should be aware of the impact that comments, marks and grades can have on learners' confidence and enthusiasm. Comments that focus on the work rather than the person are more constructive to motivate learners and in order for effective learning to happen.

When learners have a good understanding of what it is they attempt to achieve, the achievement becomes quicker and easier. Understanding and commitment follows when learners are involved in the deciding of goals and identifying criteria for assessing progress. Learners feel more comfortable in the teaching-learning situation if a teacher communicates assessment criteria in terms that they can understand or by providing examples of how the criteria can be met in practice. Gasping such assessment criteria enables learners to fare better in an attempt to do peer and self-assessment.

Closing remarks

The quest to turn on the taps in constructive assessment requires the teacher to think of teaching, learning and assessment as integrated and interrelated parts of the educational process. Furthermore the quest urges new thinking about planning for teaching, learning and assessment; to observe learning and to analyse and interpret evidence of learning in order to formative feedback to learners. It is also clear that motivation can be preserved and enhanced by assessment methods which protect the learner's autonomy, provide constructive feedback, and create opportunity for self-direction and sharpen the ability of reflection and self-assessment. In the teaching-learning-assessment process the role of mediation through language and the importance of the meta-cognition should be highly valued. It can be concluded that constructive teaching and assessment is a collaborative effort of teacher and learner in order for “deep learning” to happen. Only when assessment with learning in mind is the core focus, the global requirement for critical thinking and the application of higher order skills can be reached.

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