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English language-in-education: A lesson planning model for subject teachers

ABSTRACT

South African learners perform poorly in national and international tests aimed at measuring literacy and numeracy skills. One of the reasons for their performance is a lack of critical academic language skills in English as the Language of Learning and Teaching (LOLT). This is noted against the background of previously disadvantaged parents' high expectations of their children being given the opportunity to learn through medium of English, preparing them for success in a world where English is the lingua franca, and challenges faced by subject teachers with regard to language-in-education. The model for lesson planning and presentation, put forward in this article, guides the subject teacher through each step of the backward process of lesson design and the 'forward' process of lesson presentation. Its key focus is the integration of language and content instruction aimed at ensuring the effective teaching of key competencies in the Additional Language content classroom and thereby raising the quality of teaching and learning in South Africa.

Key words: academic language skills; language-in-education; subject teachers; additional language learners; LAC (language across the curriculum)

1.   Introduction

One of the challenges South African education faces is the low level of literacy and numeracy of learners, which inevitably contributes to the high levels of attrition and failure not only at school level (Jordaan, 2011:79) but also in higher education (Van Dyk & Coetzee-Van Rooy, 2012). This is evident from various tests, such as the Trends in International Mathematics and Science Study (TIMMS), the Progress in International Reading Literacy Study (PIRLS), and the Annual National Assessment (ANA) papers written by learners in Grades 1 to 6 and Grade 9 in Mathematics and Home Language, as well as from analyses of the failure and drop-out rates of students in higher education in South Africa (Scott, 2009). The TIMMS, PIRLS and ANA results show that the literacy and numeracy skills of learners in basic education in South Africa are far below what is required for them to learn and develop effectively. In the 2013 ANAs Grade 4 learners only achieved an average of 39% for English First Additional Language (EFAL) and an average of 37% for numeracy. The scores of Grade 5 learners dropped to 37% and 33% respectively (SA News.gov.za., 2013).

These results create the notion of a crisis in education, especially when one takes note of the World Economic Forum's 2013 Global IT Report that ranks South Africa 122nd out of 148 countries for its quality of primary education, last for the quality of its Mathematics and Science education and 146th for its overall education system (Schwab, 2013:346-347).

De Bot (2005:9-10) argues that South Africa's bad performance may be related to backlogs and poverty in the surrounding community and to the quality of teaching and learning in the classroom. Various national intervention programmes (e.g. the implementation of Curriculum and Assessment Policy Statements (CAPS) with more structured and prescriptive content to ensure that schools across the country cover the same topics and skills at the same time; the provision of CAPS aligned workbooks; focused teacher training such as the training of English First Additional Language teachers for primary and secondary school in collaboration with the British Council) and provincial initiatives (Gauteng Province's Literacy and Mathematics Strategy and the Literacy and Numeracy strategy of the Western Cape) prove that both the National Department of Basic Education (NDBE) and provincial departments are serious about raising the quality of education in South Africa. Yet, the improvement in the quality of school education remains uneven (Van Dyk & Coetzee-Van Rooy, 2012:8).

Quality may still be elusive in many schools because the majority of learners have to learn through the medium of an additional language (English) (Rademeyer, 2014) and are taught by teachers (both language and content teachers) who are not trained to equip learners with critical academic language skills (Uys, Van der Walt, Van den Berg & Botha, 2007); and who are second language speakers of English themselves. In agreement with Jordaan (2011:79) the term 'additional language' as opposed to 'second language' is used here; the reason being that many South African children are

exposed to more than one language in the home and community in addition to and often before learning English

Weideman (2013:12) warns that these learners whose parents deliberately choose to send them to English schools, are often exposed to their additional language before they have a settled competence in their mother tongue which means that their linguistic development is severely hampered (Alexander and Bloch, 2004; Alexander, 2005; Bloch, 2006). Already at the start of the previous decade Heugh (2000:5-6) warned that language would become the most important factor in determining the failure of the majority and the success of a tiny minority. In 2013 the Minister of Basic Education, supported by findings of the National Education Evaluation and Development (NEEDU) report, stated that her department realised the learning difficulties experienced by learners who "do not speak the language of teaching in the schools that they attend" (DBE, 2013:2). She reported on steps that the DBE had taken to overcome these difficulties namely the introduction of English as a compulsory First Additional Language in all African language speaking schools, supported by new workbooks.

A few months earlier, when the DBE reported on the ANA results a strategy was announced to address the poor performance in numeracy namely to integrate language and mathematics teaching (DBE, 2012:68). No detail was given on how this intervention would be managed, nor was any mention made of teaching language across the curriculum (LAC).

LAC is a generally accepted approach to language teaching (Richards & Rodgers, 1986). It was particularly focused on in schools in the United Kingdom in the 1970's after the release of the Bullock report (1975) which recommended that each school should have an organized policy for language across the curriculum, establishing every teacher's involvement in language and reading development throughout the years of schooling (1975:514). Language development in bilingual education was also the research focus of Canadian, Jim Cummins during the 1970's. His work resulted in a distinction being drawn between Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP) (Cummins, 1986; Cummins & Swain, 1986). BICS are language skills needed for social interactions in context-rich environments while CALP refers to the level of English proficiency required by the learner to engage in cognitively complex operations that would enable them to deal with language in abstract, context-reduced forms in formal academic settings. Unlike (BICS), CALP is not automatically acquired, but develops through formal and explicit instruction at all stages of the education process (Cummins, 2008; Scarcella, 2011).

Despite the long-standing international awareness of the importance of teaching language across the curriculum to assist learners who have to learn through medium of a second or additional language, it has largely been neglected in teacher-training programmes (cf. Uys et al, 2007; O'Connor & Geiger, 2009; Mroz, 2006; Wong-Fillmore & Snow, 2000; Andrews, 2003; JET, 2014).

The purpose of this article is to highlight the importance of training teachers in integrating academic literacy practices with that of each school subject and to propose a practical model for the planning and teaching of content and language integrated lessons – a 'tricky business' (Reagan, 2009:vii). This model is currently being used by the Department of English at the faculty of Educational Sciences at the North West University (NWU), the only higher education institution investigated by the Joint Education Trust (JET) that offers training in teaching LAC (JET, 2014:27).

2.   Content and Language Skills

It is generally accepted that all teachers have a role to play in developing learners' academic language skills (cf. Goodwyn & Findlay, 2003; Uys, Van der Walt, & Botha, 2006; Colombo & Furbush, 2009; Klaasen, 2002).

Chamot and O'Malley (1994) argue that all teachers should know how to address the language demands of their subjects, as learners spend most of the school day with content area teachers. According to Marland (1977:3) content area classrooms offer great potential for language development as real contexts are provided. The content teacher can however only act on this opportunity for language development if she understands the language needs of her learners as well as the language demands of the subject area. Often these particular subject-related language demands are invisible to subject teachers who are not accustomed to thinking of themselves as language teachers (De Jong & Harper, 2005:109).

Diaz-Rico and Weed (2002:117) refer to "English as an invisible medium" based on the fact that its role in teaching and learning academic content is assumed rather than made explicit. They state that in a classroom where the content teacher explicitly addresses the needs of learners, the language of teaching and learning will be "very much present and accounted for", which implies that teachers will extend practices of good teaching to incorporate techniques that teach language as well as content.

The common assumption in South Africa is that learners attain literacy, numeracy and life skills in the foundation phase and that, after Grade 3, they will be competent enough to make the transition from learning to read to reading to learn, by using their additional language, English, as medium of learning (Uys *et al*., 2007). The result of this assumption, according to De Jong and Harper (2005:104), is that teachers tend to assist learners in avoiding the language demands in particular school subjects. They often try to 'get around' the academic English used in textbooks by reverting to translation into one of a number of languages that may be represented in the classroom. A more useful strategy to employ might be code-switching that follows functional and grammatical principles and is a complex, rule-governed phenomenon (Heredia & Altarriba, 2001). According to Van der Walt (2009:31) code switching can become a powerful resource once its use in classrooms has been formalised and it has

been included in teacher training courses to ensure its responsible use as a teaching tool.

When teachers have not been trained in code-switching they often randomly revert to the mother tongue in order for them to explain content ideas at a broad level while failing to develop learners' ability to use English to carry out academic tasks in English, including writing tests and examinations (Leung and Franson, 2001:171). Uys, Reyneke and Kaiser (2011) found that subject teachers often expect learners to copy down passages from the chalk board or textbook mechanically and then memorise these in order to pass an examination. Instead of trying to 'get around' the LOLT, subject teachers should tackle the challenge of 'unlocking' the language by explicitly teaching content vocabulary so that learners can make sense of concepts they are confronted with in study material (Blachowicz & Fisher, 2004:68). Together with this focus on content-specific academic vocabulary comes explicit content-area reading and writing instruction that are essential for learning to be effective (Barton, Heidema & Jordan, 2002:2). Explicit reading and writing instruction should be followed by appropriately scaffolded opportunities for learners to learn to read with comprehension and to use academic language in expressing their understanding (Gibbons, 2002:158).

While Ulusoy and Dedeoglu (2011:2) found that subject teachers typically resist teaching language across the curriculum, a national survey conducted in the United States of America (USA) by The National Center for Literacy Education (NCLE) established that the strong majority of US educators understand and embrace the fact that literacy is at the core of every subject area and that literacy is not just the English teacher's job anymore (NCLE, 2013:8). These teachers expressed a clear need to learn more about strategies to meet their students' literacy needs (NCLE, 2013:8). Heugh (2006:9) affirms that South African teachers need to be trained to teach language across the curriculum because they do not know how to help their learners to successfully "bridge the gap between learning in the mother tongue and learning through a second language of education, English".

The model for lesson planning and presentation that will be discussed in the following section is aimed at practically illustrating "how" content teachers may help learners to bridge the language gap. It was developed by the Department of English at the Faculty of Education Sciences at the NWU while working on a Thuthuka project (2007-2009) that involved Afrikaans and African mother tongue teachers from five schools in the Mafikeng district of the North West Province. The purpose of the project was to determine the language needs of both teachers and learners in Grade 8 Mathematics, Science and Technology classrooms where English is the LOLT. While working with these teachers it became clear that a model for language teaching similar to the Sheltered Instruction Observation Protocol (SIOP) developed in the USA "that may be part of an ESL program, a late-exit bilingual program, a two-way bilingual immersion program, a new-comer program, or a foreign language immersion program" would not be applicable to South African circumstances (Echevarria, Vogt & Short, 2000:9).

The SIOP Lesson Planning Guide (Echevarria et al, 2000:191-194) provided direction but it proved to be complex and difficult to implement during the research project. The challenge was to come up with a user-friendly model, accompanied by a hands-on tool, that would promote both conceptual and language development in mainstream classrooms and would offer practical guidance to teachers when they plan and present content and language integrated lessons. This model is currently being used in training all student teachers at the Potchefstroom Campus of the NWU.

3. A model for content lesson planning and presentation

The model proposed here follows the principle of backward design (i.e. starting with the end in mind). It contains eight interconnected segments of lesson planning: identifying content to be taught, defining a lesson objective, and then planning assessment, learning activities, teaching activities, resources, the introduction, and a "pertinent" question. The model portrays lesson planning as an iterative rather than a linear process. The segments are interconnected and dependent upon each other, allowing the teacher to move back and forth to any of the segments during the planning process, to add or change ideas. It is illustrated with the planning of a Grade 8 lesson in Natural Sciences.

3.1 Preliminary considerations

At the start of any planning process, the teacher usually considers questions such as the following: *What is the context of the school? Which resources are available? Who are my learners? What are their interests, strengths and weaknesses? How proficient are they in the LOLT? How much time is available for the attainment of lesson objectives?* As a rule, the answers to these questions guide the teacher in the development of all cycles and lessons.

3.2 Identifying content

The next step in the planning process is to skim and scan the policy document or curriculum and/or text book(s) in order to identify the theme and specific topic of the lesson. For example, one of the strands or themes in the Curriculum and Assessment Policy Statement (CAPS) for Grade 8 Natural Sciences is *Life and Living*. One of the themes to be taught within this strand is *Interactions and Interdependence within the environment* (DBE, 2011:37). CAPS lists the following topic and concepts to be taught about this theme: *Feeding relationships – plants as producers, animals as consumers that are classified as herbivores, carnivores (predators, scavengers, insectivores), omnivores, and decomposers.* Since proper language instruction is a prerequisite

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for learning the teacher needs to identify key vocabulary and subject obligatory and subject compatible language to be taught.

3.3   Lesson objectives

The model proposes a task-based methodology which directs the next step in the planning process: formulating achievable lesson objectives to be attained by performing an authentic learning task. This task should go beyond mere memorisation; it should require learners to apply, analyse, evaluate or create. The task should satisfy the criterion of being *specific, measurable, attainable, relevant and traceable* (*SMART*):

- *Specific* implies a goal-oriented, contextualised, and authentic task.

- The term *measurable* refers to the use of a verb describing a specific process that can be measured, e.g. *draw* or *explain*, as opposed to expecting something vague from the learners such as *know* and *understand*.

- *Attainable* refers to a task that is within the grasp of learners, taking into account their knowledge and skills levels, and factors such as time constraints and available resources.

- *Relevant* refers to important and contextualised content.

- *Traceable* refers to a task that is traceable both as a process and as a product i.e. there should be evidence of performance both during the process of content and language learning and at the end when the final product of learning is presented.

In addition, the teacher should focus on the language skills required for attaining the content objective(s). She should integrate a *SMART* language objective with the *SMART* content objective, incorporating one or more of the four language skills.

A task for this lesson could be as follows:

> *By the end of the lesson learners will be able to create a flow chart with pictures and/or illustrations on an A3 size paper on which they:*

> - *distinguish between producers and consumers;*

> - *distinguish between direct consumers (herbivores) and indirect consumers (carnivores), as well as among carnivores, omnivores and decomposers;*

- *distinguish among different carnivores: predators, scavengers, and insectivores;*

- *clearly portray the feeding relationships among these organisms;*

Language: Each learner should prepare to orally present his/her flow chart to a peer and explain the interactions and interdependence among the organisms in the environment, using newly acquired vocabulary and portraying the ability to string these newly learnt words together to express understanding of the content (e.g. directly/indirectly dependent on...; carnivores feed on herbivores; plants produce food for...; living organisms are interdependent which means...; within the environment; a variety of living organisms that...; scavengers are animals such as...; depend on ... for survival).

3.4   Assessment

In accordance with the backward design principle, the teacher's next task is to consider how the *SMART* task will be assessed. Appropriate assessment methods and techniques must now be identified and a tool such as a rubric or checklist should be generated. The purpose of assessment is not only to establish whether the learners have reached the set objectives but also to enhance learning. As the completion of this task may be viewed as part of the process of learning, it makes sense not to evaluate the product by means of grading, but rather to guide learners in taking responsibility for their own learning by involving them in assessing a peer's flow chart and presentation. For this, the teacher needs to draft a peer checklist which clearly pins down the lesson objectives.

It can take the form of a simple YES/NO checklist on which the peer can tick off whether the partner's flow chart has been drawn correctly, whether it distinguishes among the feeding groups and portrays the feeding relationships among these organisms, and whether the partner can orally explain the interactions and interdependence among the organisms in the environment, as set out in the *SMART* content and language objectives above. The checklist should also include an evaluation of language use. During the peer assessment the teacher will observe, coach and provide formative feedback.

It is important for the teacher to consider her own language use and ensure that instructions for the tasks are clear and simple and that questions are comprehensible.

3.5   Planning and aligning the process of teaching, learning and assessment

Backward planning now brings the teacher to breaking down the *SMART* task into activities to be performed in the process of learning, planning teaching for each step of the process, and integrating continuous assessment to optimise both content and language learning. The *process of learning* implies that activities should progress from

lower to higher cognitive levels: only once a learner remembers and understands will she be able to apply new knowledge and skills and be able to evaluate and create.

The hands-on planner clearly shows the connection between *teaching, learning* and *assessment* and helps the teacher to align these segments by going back and forth among the segments and revise if necessary. Questions similar to those suggested by Wiggins and McTighe (2005) help the teacher to identify the relevant teaching activities and design scaffolding strategies that will enable the learner to attain the required lesson objectives.

- What enabling knowledge (facts, concepts, and principles) and skills will students need to effectively execute the *SMART* task and the subsequent learning tasks?

- What language skills (reading, writing, speaking listening), must be explicitly taught to enable learners to acquire the necessary content knowledge?

- What will need to be taught and coached, and how should it best be taught and supported in light of performance outcomes?

- What materials and *resources* are best suited to accomplish these outcomes? How should these be adapted to accommodate additional language speakers?

The importance of language is stressed because noticing language, even when it appears to be transparent, is essential for teachers committed to supporting the general intellectual and specific subject matter competencies of students at all levels (Darling-Hammond and Bransford, 2005:127). On a practical level this means that the teacher is prompted to formulate leading questions, think of ways to simplify concepts and use decoding strategies for difficult terminology, and to plan delivery.

Typical learner activities, teaching activities and assessment for the Grade 8 Natural Sciences lesson may proceed as explained in Appendix A. While planning for these stages of the lesson the teacher will also be able to list necessary resources.

3.6   Resources

The resources section helps the teacher to think about the different ways the new content can be presented to the learners, making sure to include a variety of resources that will allow learners with different learning styles to grasp the content. By knowing the learners' strengths, weaknesses and language needs the teacher can select the best

resources to unlock the new content and may need to adapt realia and visuals such as concept maps, graphic organizers, hand-outs and worksheets to scaffold both content and language learning.

3.7   Introduction

Contrary to all linear lesson templates the next step requires the design of an introduction and problem statement. This only happens in the final stages of the planning process as the insight into what is required to activate learners' schemata and prior knowledge requires an in-depth understanding of what needs to be taught. As far as the language objectives are concerned, the teacher plans for the revision of relevant vocabulary and language structures from previous lessons and for the introduction of new words and concepts to be clarified and taught explicitly.

The Natural Sciences teacher would activate her learners' prior knowledge on the previous study unit that focused on biotic (*the prefix bio- meaning life/living things*) and abiotic (*non-living*) factors and their interdependence within the environment.

The final step in the planning process is to think of the 'pertinent' question.

3.8   Pertinent question

The 'pertinent' or essential questions (cf. Wiggins & McTighe, 2005; Colombo & Furbush, 2009) encourage, hint at and even demand transfer beyond the particular topic in which we first encounter them. These questions are often directly linked to the introduction and the aim is to stimulate thought, provoke inquiry, and spark more questions – including thoughtful student questions (Wiggins & McTighe, 2005:106). Pertinent questions place the learning material in context for the learner, making it relevant to his/her world. The teacher could use the following scenario to stimulate learners' thinking about *Interactions and interdependence within the environment with a specific focus on feeding relationships*:

> *In 1949, five domestic cats Felis catus were introduced to sub-Antarctic Marion Island (29, 000 ha; 46°54'S, 37°45'E; South Africa) as pets. By 1977 their number had grown to a round 3,400. What effect do you think this had on the seabird population?*

4.   Presentation of the lesson

The teacher, who may also be a second language speaker of English, needs to prepare for lesson presentation. This includes looking up synonyms and antonyms that might be needed when new words and concepts are to be explained and preparing to simplify, exemplify, rephrase and paraphrase when teaching about content. The teacher furthermore needs to pay attention to the pronunciation of unfamiliar words and ensure that she uses the appropriate tone of voice and register during lesson presentation. It might also be important to speak slowly and allow for longer pauses so that additional language learners have time to process information.

The model allows for the complexity of the classroom since it allows the teacher to adapt or change the sequence in which activities take place during the session while adhering to the 'plan'. Ideally the lesson starts with the pertinent question or restating the learning objective as an 'essential question', followed by the introduction during which learners' prior knowledge is activated. Subject content and language are taught and learners are actively involved in activities that promote content and language learning (see Appendix A).

Continuous, formative assessment is implemented to monitor and clarify understanding. Learner activities culminate in the *SMART* task, the assessment of which allows the teacher to reflect on the attainment of learning objectives.

5.   Conclusion

"In South Africa, there is general agreement that the education system at all levels needs well-planned and well-implemented interventions to improve" (Van Dyk & Coetzee-Van Rooy, 2012:7). An intervention that should urgently be considered by both the Department of Basic Education and the Department of Higher Education and Training is the training of pre- and in-service teachers to plan and teach content and language integrated lessons in schools where English is the LOLT. Only once teachers understand and embrace the fact that literacy is at the core of every subject area and know how to meet their students' literacy needs will there be an improvement in the literacy and numeracy levels of thousands of learners whose only chance at a better life lies in proper basic education.

The key focus of the model for lesson planning and presentation presented in this article is the integration of language and content instruction aimed at ensuring the effective teaching of key competencies in the Additional Language content classroom and thereby raising the quality of teaching and learning in South Africa.

Acknowledgments

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Appendix A: Example of lesson plan

Teaching	Learner activity	Assessment	Resources
1. After activating her learners' prior knowledge on the previous study unit that focused on biotic (the prefix bio- meaning life/living things) and abiotic (meaning non-living) factors and their interdependence within the environment, the teacher points out that living organisms have different diets. She asks learners questions on what they prefer to eat, what they feed their pets and why they think certain living organisms prey on others.	Learners answer questions about the diets of humans and animals (cognitive levels: remembering and understanding)	Teacher observation and coaching	Revise vocabulary and concepts by using resources from previous lesson(s) e.g. word bank, poster or pictures of living and non-living organisms.
2. The teacher explains that there are feeding relationships among all living organisms. She activates learners' prior knowledge on photosynthesis (which was dealt with in the first two weeks of the term) as the process by which plants produce their own food. She starts creating a flow chart on the chalk board in which she portrays the abiotic factors (sun, water, air and soil) that have an effect on plants as *producers* of food and the relationship between the producers of food and animals as *consumers* of food. She links these two words to learners' real life experiences by asking them about words like *produce, product, consume* and *consumption*. As she writes down the new words on the flow chart she teaches the pronunciation and expects the learners to repeat the words after her. She continuously and interactively assesses her learners' understanding of concepts which underpins comprehension of the new subject content. She uses arrows to indicate interactions and interdependence. When she starts classifying animals into feeding groups, she explains that the suffix –*vores* comes from the Latin word *vorus*, which *means to swallow up*; to eat. She shows learners the links with the word devour. Then she decodes the words *herbivore, carnivore, omnivore* and insectivore.	Working in pairs, learners are required to use the flow chart on the chalk board and explain to each other the effect of abiotic factors and the concepts of interaction and interdependence among different organisms and feeding groups (cognitive level: application)	Learners' content knowledge as well as language and presentation skills (grammar, tense, concord, pronunciation, register, tone of voice, volume) are observed and monitored by the teacher who tries to move around as much as possible in order to give feedback and lend support where needed. She spends time clarifying the understanding of individual learners who struggle. After the pair activity she calls on individual learners to share their understanding of the different feeding groups and their interactions and interdependence within the environment with the class. She informally assesses their performance, clarifies understanding and provides formative feedback.	Flow chart

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She asks learners what they think the prefixes mean in each instance and explains that *carni-* comes from Italian meaning *meat*; *herbi-* comes from Latin meaning grass or herb, while *omni-* is a Latin prefix meaning *all or every*. She talks about the meaning of words that learners might identify such as omnipotent; omnipresent; herbicide; carnage; carnival. Learners are asked to explain the meaning of insectivore and to think of animals that eat insects. On the flow chart the teacher distinguishes among the different carnivores (predators; scavengers; insectivores) before she gets to an explanation of the concept *detrivore*. She explains that the prefix *detri-* means dead matter; thus *detrivores* feed on dead matter. She moves on to the part played by *decomposers* in the environment. She also decodes this word by asking questions about the relevance of the word in real life and explaining each part of the word. She emphasizes the use of phrases such as *depend(s) on/is dependent on/feed(s) on* that are used to explain the relationships among different feeding groups. ***Instead of language becoming a barrier to learning, the teacher uses it as an effective tool to unlock new content and ensure enduring understanding.***		
As a follow-up activity learners are required to copy the flow chart in their scripts, find pictures of at least one animal representing each feeding group and write a 100 word paragraph in which they explain the interaction and interdependence of living organisms belonging to different feeding groups within the environment (*cognitive level: creating*).	In the following session learners will share their paragraphs with a different peer who will assess and edit the writing by using a checklist made available by the teacher, thus focusing learners' attention on language use. The teacher will finally mark the paragraphs herself and give feedback.	Peer checklist (see *paragraph on Assessment above*); rubric for formal teacher assessment (*criteria will be aligned with SMART lesson objective*)

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