Revisiting The Learning Methods in Higher Education

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INTRODUCTION:"Excellence is never an accident. It is always the result of high intention, sincere effort, and intelligent execution; it represents the wise choice of many alternatives—choice, not chance, and determines your destiny."—Aristotle. If Aristotle is correct, then we in academic advising can always use assistance to be as intentional as possible in our practice. Advising as teaching is a paradigm that has been advocated by many authors (Lowenstein, 2005; Hemwall & Trachte, 1999, 2003), but intentionally identifying what students need to learn is critical. As Martin (2007) stated, "Learning objectives answer the question: what should students learn through academic advising?" Likewise, Steele (2014) argued for the intentional use of technologies as tools. Tools are designed for specific uses. The best use of technologies is when their capabilities align with our advising goals. To help advisors achieve better student learning outcomes and improve program assessment, this article will use elements of Steele's model for intentional use of technology and combine these with elements of the curriculum development model called *Understanding by Design*. Integrated, these two models offer a conceptual way to re-consider how to organize learning outcomes and program assessment.

There have been increasing complaints from the teachers of students being admitted to Arts colleges with comfortable grades that find it difficult to understand and reproduce conceptual knowledge. We would like to set up a mechanism to analyse and engage students who we perceive are not capable of grasping concepts.

This paper is based on few assumptions and these are drawn from author's personal experiences of teaching in an undergraduate Arts and Commerce College in Belagavi. Currently, we have little data to substantiate the assumptions we make. However, the result of this paper may lead to further scope for research in this area.

ASSUMPTIONS

1. There has been an apparent decrease in the quality of students.
2. Rural Students on average find college a steeper learning curve

3. The small sample of Arts students of a leading undergraduate college of Belagavi has been considered to be sufficient to show a proof-of-concept of the method implemented.
4. That all higher education involves greater levels of conceptual learning.

WHAT IS CONCEPTUAL LEARNING?.... A REVIEW

Conceptual learning is the cornerstone of higher education. The higher a student progresses in an education the more complicated information becomes. A simple example is the Cell in biology which gets more and more detailed. Sometimes there is gross simplification in lower classes that must be corrected in higher ones. This requires that most of college education will mostly be conceptual in nature. According McKenzie, conceptual learning is the learning of that which represents something beyond itself. It is like signs on a map. [Mc Kenzie, 2008]. There is a difference between an image and a concept. A concept works more like a collection of ideas rather than a single image in the mind. In Plato's dialogue Symposium there is an interesting discussion on beauty. In short, it brings to our attention the way we talk about beauty. How can we call a statue, form or even, for that matter, a mountainside view beautiful when they are not the same image? The concept then is not limited to an image, but to the many ways in which we use a particular word with the meaning that stems directly from the context. A concept is then a word surrounded by inferential statements [Mc Kenzie, 2008]. By its very nature, each concept presupposes the presence of certain systems of concepts [Vygotsky 1987]. If there is a context surrounding the use of a word, a person can grasp a concept better when he/she can understand it in a larger number of contexts. We must look for the relation between the mind and the world 'not in absolute perceptions and orthoscopic descriptions, not even in concrete verbal images that replace the general representations-we must seek it in the system of judgements in which the concept is disclosed' [Vygotsky, 1988, p. 55].

THE NATURE OF ASSESSMENT:Assessment can be defined as a sample taken from a larger domain of content and process skills that allows one to infer student understanding of a part of the larger domain being explored. The sample may include behaviors, products, knowledge, and performances. Assessment is a continuous, ongoing process that involves examining and observing children's behaviours, listening to their ideas, and developing questions to promote conceptual understanding. The term authentic assessment is often referred to in any discussion of assessment and can be thought of as an examination of

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student performance and understanding on significant tasks that have relevancy to the student's life inside and outside of the classroom.

The increasing focus on the development of conceptual understanding and the ability to apply science process skills is closely aligned with the emerging research on the theory of constructivism. This theory has significant implications for both instruction and assessment, which are considered by some to be two sides of the same coin. Constructivism is a key underpinning of the National Science Education Standards.

Constructivism is the idea that learning is an active process of building meaning for oneself. Thus, students fit new ideas into their already existing conceptual frameworks. Constructivists believe that the learners' preconceptions and ideas about science are critical in shaping new understanding of scientific concepts. Assessment based on constructivist theory must link the three related issues of student prior knowledge (and misconceptions), student learning styles (and multiple abilities), and teaching for depth of understanding rather than for breadth of coverage. Meaningful assessment involves examining the learner's entire conceptual network, not just focusing on discreet facts and principles.

THE PURPOSE OF ASSESSMENT: Critical to educators is the use of assessment to both inform and guide instruction. Using a wide variety of assessment tools allows a teacher to determine which instructional strategies are effective and which need to be modified. In this way, assessment can be used to improve classroom practice, plan curriculum, and research one's own teaching practice. Of course, assessment will always be used to provide information to children, parents, and administrators. In the past, this information was primarily expressed by a "grade". Increasingly, this information is being seen as a vehicle to empower students to be self-reflective learners who monitor and evaluate their own progress as they develop the capacity to be self-directed learners. In addition to informing instruction and developing learners with the ability to guide their own instruction, assessment data can be used by a school district to measure student achievement, examine the opportunity for children to learn, and provide the basis for the evaluation of the district's science program. Assessment is changing for many reasons. The valued outcomes of science learning and teaching are placing greater emphasis on the child's ability to inquire, to reason scientifically, to apply science concepts to real-world situations, and to communicate effectively what the child knows about science. Assessment of scientific facts, concepts, and theories must be

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focused not only on measuring knowledge of subject matter, but on how relevant that knowledge is in building the capacity to apply scientific principles on a daily basis. The teacher's role in the changing landscape of assessment requires a change from merely a collector of data, to a facilitator of student understanding of scientific principles.

THE TOOLS OF ASSESSMENT: In the development and use of classroom assessment tools, certain issues must be addressed in relation to the following important criteria.

A. Purpose and Impact— How will the assessment be used and how will it impact instruction and the selection of curriculum?

B. Validity and Fairness— Does it measure what it intends to measure? Does it allow students to demonstrate both what they know and are able to do?

C. Reliability— Is the data that is collected reliable across applications within the classroom, school, and district?

D. Significance— Does it address content and skills that are valued by and reflect current thinking in the field?

E. Efficiency— Is the method of assessment consistent with the time available in the classroom setting?

There is a wide range of assessments that are available for use in restructuring science assessment in the classroom. These types of assessments include strategies that are both traditional and alternative. The various types of alternative assessments can be used with a range of science content and process skills, including the following general targets.

Declarative Knowledge— the "what" knowledge

Conditional Knowledge— the "why" knowledge

Procedural Knowledge— the "how" knowledge

Application Knowledge— the use of knowledge in both similar settings and in different contexts

Problem Solving— a process of using knowledge or skills to resolve an issue or problem

Critical Thinking— evaluation of concepts associated with inquiry

Documentation— a process of communicating understanding

Understanding— synthesis by the learner of concepts, processes, and skills

Assessment can be divided into three stages: baseline assessment, formative assessment, and summative assessment. Baseline assessment establishes the "starting point" of the student's understanding. Formative assessment provides information to help guide the instruction throughout the unit, and summative assessment informs both the student and the teacher about the level of conceptual understanding and performance capabilities that the student has achieved. The wide range of targets and skills that can be addressed in classroom assessment requires the use of a variety of assessment formats. Some formats, and the stages of assessment in which they most likely would occur, are shown in the table.

ASSESSMENT FORMATS		
Format	**Nature/Purpose**	**Stage**
Baseline Assessments	Oral and written responses based on individual experience Assess prior knowledge	Baseline
Paper and Pencil Tests	Multiple choice, short answer, essay, constructed response, written reports Assess students acquisition of knowledge and concepts	Formative
Embedded Assessments	Assess an aspect of student learning in the context of the learning experience	Formative
Oral Reports	Require communication by the student that demonstrates scientific understanding	Formative
Interviews	Assess individual and group performance before, during, and after a science experience	Formative
Performance Tasks	Require students to create or take an action related to a problem, issue, or scientific concept	Formative and Summative
Checklists	Monitor and record anecdotal information	Formative and Summative
Investigative Projects	Require students to explore a problem or concern stated either by the teacher or the students	Summative
Extended or Unit Projects	Require the application of knowledge and skills in an open-ended setting	Summative
Portfolios	Assist students in the process of developing and reflecting on a purposeful collection of student-generated data	Formative and Summative

METHODOLOGY:

With the release of the National Science Education Standards, the issues of why, how, and what we, as teachers, assess in our classrooms will become a major challenge in the multifaceted science reform effort currently underway. As educators are changing their ideas about what constitutes exemplary inquiry-based learning, and recognizing that science is an active process that encourages higher-order thinking and problem solving, there is an increased need to align curriculum, instruction, and assessment. Classroom assessment techniques are focusing on aligning assessments more closely with the instructional strategies actually used with children.

The process of assessing the conceptual learning follows the usual inductive and deductive logical methodology here. The concept is first dimly understood in an inferential statement. 'Two claims have the same conceptual content if and only if they have the same inferential role: a good inference is never turned into a bad one by substituting one for the other. The fundamental semantic assignment of conceptual content to judgments is derived from the ultimately pragmatic notion of correctness of Inference. [Brandom, 1994]. Therefore, by using the "correct inferential technique", we can group inferential statements into a single category. By examining all the inferential statements in the category, we can extract by abstraction a concept. This concept will be a word used in various contexts but which retains an inferential role common to all the statements. Checking the correctness of inference is simply a matter of "fleshing out" the concept in different contexts, keeping in mind to retain the same inferential role. The system is simple particulars to a universal concept which is followed by the correct inferential application of the universal concept to a particular. Thus, logic governs behavior in linguistic interactions [Mc Kenzie, 1984]. The sort of understanding that is the aim of conceptual interpretation, then, is mastery of an inferential role: the ability to distinguish what follows from a claim, and what would be evidence for or against it, what one would be committing oneself to by asserting it, and what could entitle one to such a commitment' [Brandom, 2002, p. 95]. The mention of interpretation is vital for applicability. What causes one student to understand a concept better than another? The conceptual map, which provides the context of inferential statements that help to flesh out the concept, determines the extent to which a student has internalized a concept. The larger the conceptual map, the greater the level of understanding. What Mc Kenzie calls "Collateral premises" [Mc Kenzie, 2008]. Difference in observation is due to the difference between their background beliefs [Mc Kenzie, 2008]. We commonly term this "Exposure". We are currently in a case study which will test this hypothesis. If we can expand the conceptual map, we should be able to show the greater levels of conceptual learning.

ASSESSMENT OF CONCEPTUAL LEARNING AND FINDINGS: Learning a language requires reading and writing the alphabet. These can only be assessed through memory tests. However, after having learnt the way sentences are constructed through parts of speech, we can create new sentences that have never been written before or read sentences that have never been constructed before. To learn an alphabet requires Habitual learning or drill learning [Mc Kenzie, 2008]. To learn how to read and write requires conceptual learning. This is the distinction between how and knowing that [Ryle, 1949]. What is it to perform intelligently? We must be able to apply criteria in the conduct of performance [Mc Kenzie, 2008].This means that instead of a winning a chess game by chance a participant must use the rules and logical reasoning to win. For instance, a student who sings a song of a foreign language by carefully listening to the sound is not applying the proper criteria in the conduct of performance. The student has no real knowledge of the language but merely appears to do so. The assessment must help to make this very important distinction.

A majority of the students who take admission in sample undergraduate college in Belagavi have a problem reading their textbooks. Usually until PUC, they are assigned textbooks with very specific formats and headings. When they are provided with a book with no headings they are confused because they require an artificial marking in the book to delineate categories.

The main focus of the conceptual learning is to create categories where knowledge can be systematised and internalised. It functions similar to a map [Mc Kenzie, 2008] where all information is organized in an inferential manner. Statements are key [Mc Kenzie, 2008] because they are the building blocks of the inferential map. All information, if it is to learnt, must be mapped inferentially. A concept cannot be learnt in complete abstraction. Concepts lack the clarity of formulae and even definitions are partial expositions. The concept also undergoes changes in different situations. This “system of concepts” is mapped inferentially and forms the basis of categorization. The more complex the categorization, the greater the ability to grasp new information. Which is why students who listen to the same lecture will have different levels of understanding the same concept.The various forms of constructivism agree with each other that in acquiring conceptual knowledge the learner is active, that knowledge cannot be handed down, and that a learner's pre-existing understandings and purposes are relevant to what that learner will construct. [Mc Kenzie, 2008]

We are currently in an education system that checks for memorization rather than application of learnt concepts. We tend to fail on international standards as a result. Assessing conceptual learning is best done via a *viva voce*. However, considering the student-teacher ratio, we cannot recommend this as an effective tool for conceptual learning assessment.

Technology is the only way forward. MOOC's are becoming mainstream, with all the major universities of the world already using it to reach out to millions. Incidentally, they also use MOOC's as an information gathering tool for empirical research. MOOC credits are now applicable in regular courses and jobs.

For the purposes of this paper we enrolled in two MOOC's provided by EDX.org and coursera.org. The course is based around a short/long lecture followed by a quiz. The answers to the quiz may or may not be revealed as correct or false. The quiz cannot be answered only by listening to the lecture.

Multiple Choice questions are easy to assess. Good multiple choice questions are not so easy to write. However, the main focus must be on the distinction of applicability vs reproducibility. A certain number of questions may be purely memory-based serving as a good start, and to help the student revise the basics. Next, it must be followed by a comparisons and examples. Finally, a student must be able to critique any concept. This can be tested by asking the student to pick the correct category in which the concept may be put, followed by a question on which concept is opposed to it. The key is to –

a. Provide 5 options
b. Keep the options similar to each other
c. Make sure the statement and the options are absolutely clear. The best way to check is to ask a colleague or a student to write fill out the exam without any help in clarification. This can help weed out confusion arising from the construction of the question.
d. Stimulate by criticism and example of the pupils own judgement [Mc Kenzie, 2008].

Recent open-source technology has helped to make education more accessible. One such technology is Moodle. It is software that is installed on a server. One can host assignments, tests and even MOOC's with that technology and it is absolutely free to use.

It is clear that different kinds of information must be gathered about students by using different types of assessments. The types of assessments that are used will measure a variety of aspects of student learning, conceptual development, and skill acquisition and application. The use of a diverse set of data-collection formats will yield a deeper and more meaningful understanding of what children know and are able to do, which is, after all, the primary purpose of assessment.

Conclusion: There is a need to bridge the gap between different kinds of learners. With greater exposure to technology and information, certain students have an advantage over others. We can help in levelling the playing field by testing for conceptual learning and using technology to push this technique forward. Not only does it make it easier for a teacher to assess students, it also provides students with a method of grasping conceptual information. We cannot change the system immediately. However, we can use technology to work within the system to help improve education in the country, and provide a valuable service to the students and the community at large.

REFERENCES:

Brandom, R. (1994). *Making it explicit* (1st ed.). Cambridge, Mass.: Harvard University Press.

Brandom, R. (2002). *Tales of the mighty dead* (1st ed.). Cambridge, Mass.: Harvard University Press.

Coursera | Online Courses From Top Universities. Join for Free. (2017). *Coursera*. Retrieved 23 January 2017, from http://coursera.org

edX. (2017). *edX*. Retrieved 23 January 2017, from http://edx.org

Leibniz, G., Remnant, P., & Bennett, J. (1981). *New essays on human understanding* (1st ed.). Cambridge [England]: Cambridge University Press.

Mc Kenzie, J. (1984). *Frege and Illogical Behaviour*. American Philosophical Quarterly Pittsburgh, Pa 21 (4):339-348.

Mackenzie, J. (2008). Conceptual learning in higher education: some philosophical points. *Oxford Review Of Education*, *34*(1), 75-87. http://dx.doi.org/10.1080/03054980701565006

Moodle - Open-source learning platform | Moodle.org. (2017). *Moodle.org*. Retrieved 23 January 2017, from http://moodle.org

Plato., & Jowett, B. *Symposium* (1st ed.). Champaign, Ill.: Project Gutenberg.

Ryle, G. (1949). *The concept of mind* (1st ed.). Middlesex, England: Penguin Books.

Vygotskiĭ, L., Rieber, R., & Carton, A. (1987). *The collected works of L.S. Vygotsky* (1st ed.). New York: Plenum Press.

Vygotsky, L. S. (1988) *Child Psychology* (Ed. R. W. Reiber) (New York, Plenum).

Wilson, J. (1963). *Thinking with concepts* (1st ed.). Cambridge: Cambridge University Press.

Writing Good Multiple Choice Test Questions | Center for Teaching | Vanderbilt University. (2017). *Cft.vanderbilt.edu*. Retrieved 23 January 2017, from https://cft.vanderbilt.edu/guides-sub-pages/writing-good-multiple-choice-test-questions/

