Competency Assessment on Work based Learning placement – A model at the University of Mauritius for undergraduate programmes

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Abstract

Learning in a workplace environment is different from learning at school or in a university environment. Eraut, M[1], and Marsick, J & Watkins, E[2], state that one of the main differences between learning in the formal educational system and learning at work is that the former is based on formal, intentionally planned educational activities while the latter is mostly informal in nature. The acquisition of practical knowledge and skills are now being given strong prominence by many Universities worldwide. University programmes of studies are designed today with the necessary provisions to provide opportunities for students to engage in practice learning so that students at the time of graduation are fit for purpose and practice. However, it has been observed that although many programme of studies make room for placement learning, the achievement of students on practice are not being given proper recognition due to the absence of assessment. Students follow training programmes but the acquisition of knowledge and skills are not validated. Placement programme therefore needs to be well structured for students to acquire a range of competencies which should be generic and achievable at different work settings. The identification and assessment of competencies on practice offers much to education and training. They foster learning, evaluate progress, assist in determining curriculum and training program effectiveness. Competence as the outcome of the training will then be highly valued.

A model for competency-based assessment involving formative and summative evaluations have been applied at the University of Mauritius. A set of core competencies have been identified and specific assessment criteria are set so that students can be assessed on eventual placement. This has enabled the trainee undergraduates to develop core competencies which have largely contributed to enhance their skills and employability. The experience gained under the Work based Learning initiative proved to be different from other types of industrial training in the sense that students' performance and engagement in the work settings were closely monitored and progressively assessed. Mentors have positively rated the competencies that students must develop at the work settings. They agree that the competencies identified not only provide the necessary guidance to know what students must achieve during the practice learning, but also provide the support for the work setting to put in place the necessary infrastructure and logistics in order to ensure that students have a safe, fair and equitable Work based Learning experience. This has enabled students to be more confident and feel better prepared to step in the world of work

Introduction

According to Roegiers, X [3], the majority of the educational systems have agreed to integrate the competency based approach within their curricula to respond to both the economic and social needs. Paquette, G [4] defines competency as a statement of principle

that determines a ternary relationship between a public target or "actor", knowledge and a skill. Professional competence consists of cognitive, integrative, relational, affective/moral, and habits of the mind dimensions. It is developmental and context-dependent. Competencies are demonstrable elements or components of performance (knowledge, skills, attitudes and their integration) that make up competence.

Grant, G et al [5] states that competence-based assessment is a form of assessment that is derived from a specification of a set of outcomes; that so clearly states both the outcomes-general and specific-that assessors, students and interested third parties can all make reasonably objective judgements with respect to student achievement or non-achievement of these outcomes; and that certifies student progress on the basis of demonstrated achievement of these outcomes. In addition, Raven, J et al [6] states that the practice of competence-based assessment encapsulates the following features:

- the emphasis on outcomes; specifically, multiple outcomes, each distinctive and separately considered.
- the belief that these outcomes can and should be specified to the point where they are clear and transparent Assessors, assessees, and third parties should be able to understand what is being assessed and what should be achieved.
- the decoupling of assessment from particular institutions or learning programmes.

With this increased emphasis on student learning outcomes, Universities must necessarily turn their attention to the articulation and direct assessment of competencies, and not rely merely on the accrual of hours as a proxy for competence. The passage of time, in and of itself, does not produce professional competence. Instead, competence is achieved by engaged participation in structured educational activities and closely supervised experiences that, in fact, do occur over time. That is, competence is a product of both intentional educational interventions and a sufficient passage of time to allow for development.

Black, P & William, D [7] state that formative evaluations assess competence and provide ongoing corrective, developmentally informed feedback to the individual to foster growth. Summative evaluations measure outcomes at the end-point of a developmental process for purposes of progression and gatekeeping. Placement learning should incorporate both formative and summative assessment.

Formative Assessment

The concept of the formative assessment was first introduced by Scriven, M [8] in 1967 , then enhanced by Bloom, B [9] in 1971. According to Scallon, G [10], formative assessment takes a focal place in any learning process, whose role, is not to certificate, but to provide a scholastic democratisation**,** which has been introduced since the 1960's, highlighting a concern for assessment as a process of continual verification to guide the teaching and learning demarche. According to Endrizzi, L et al [11], the objective of reflections is to engage learners and increase their interest to make a progress in addition to accurately measuring them. Besides, it involves a trial in regard to a standard and the challenge is not just exactitude and objectivity, but an invitation to adhere to one's learning and encouragement to share the outcome too.

The formative assessment involves a cycle composed of three levels:

1) *Observation:* the role of this stage is to construct a reality of learning, conditions, modalities and their results. According to Perrenoud, Ph [12], the observation is formative when it is used to guide and improve learning regardless of ranking, certifying or selecting the learner. It is rather to expose the state of knowledge and skills, instead of confining himself to be on a scale and compare it to other learners.
2) *Intervention*: it separates the symptoms to address the sources of the difficulties. It involves analysing metacognitive knowledge that is very mysterious as stated by Perrenoud, Ph [12]. Indeed, he believes that assessing competency by only observing the learners reach limits very quickly, especially in a training exercise: say "you can do better" does not help the learner to do it better. To be useful, the observer must identify, isolate mental functions or specific actions and identify their weaknesses.
3) *Regulation*: Allal, L [13] states that the concept of regulation has been developed to describe the mechanisms that provide guidance, control and the adjustment of cognitive activities, emotional and social as well as their relationship with a learner. Endrizzi, L et al [11] states that the regulating of learning process involves all operations of the metacognitive learning and interactions with the environment that influence learning process in the sense of a defined objective.

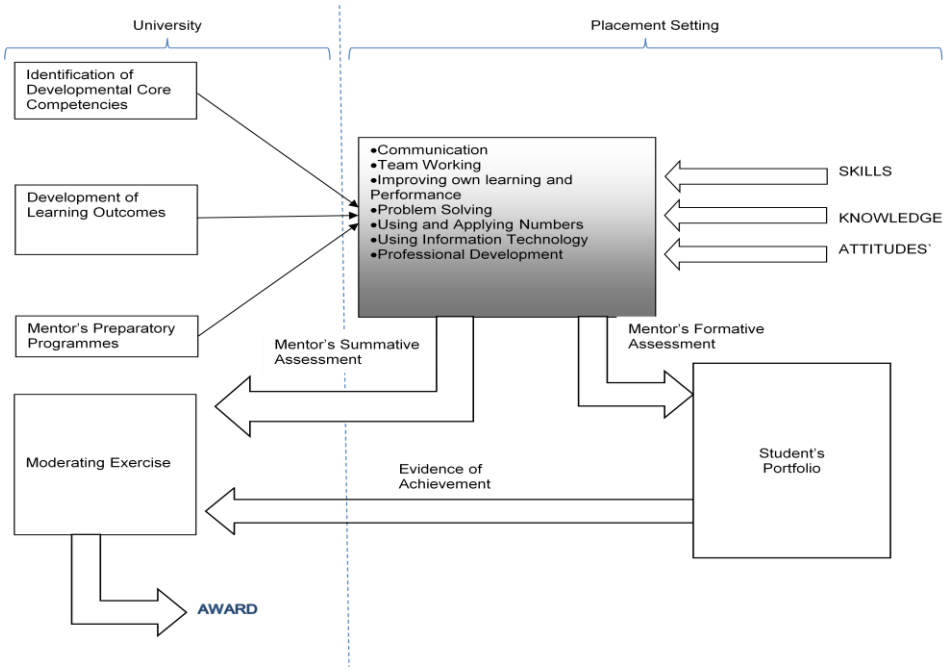
Summative Assessment

Summative assessment is a formal process and is used to see if learners have acquired the skills, knowledge and attitudes that the practice learning set out to provide. The goal is to measure the level of success or proficiency that has been obtained at the end of the learning practice. Black, P et al [7], as cited by Brookhart, S [14], explaining summative assessment via analogy, states, "when the cook tastes the soup, that's formative assessment; when the customer tastes the soup, that's summative assessment". Summative assessment in practice provides students with opportunities to demonstrate their achievement of the enduring learning addressed during the placement period. It is used in combination with data from formative assessment to:

- describe what students know, can do and value;
- evaluate student growth relative to the purpose of the activity or programme;
- evaluate student growth relative to the curriculum expectations and the provincial standards.

Summative assessment in practice learning certificates learners which help them build self confidence. The skills acquired are validated certifying that the learner has achieved the performance required. Summative evaluations are used to determine if students have mastered the specific competencies set.

The Model



The above model has been tried at the University of Mauritius and is based on Paquette, G [4] modeling skills where he defines competency as a relation linking three areas:

1) Knowledge: may be concepts, procedures, principles or specific events such as to define the performance of a role or task. Knowledge is related to an area that qualifies for: domain knowledge.
2) Skills: describe the processes that can be applied to domain knowledge to perceive, remember them, assimilate them to analyse, synthesize or evaluate. These processes are, in fact, "metaprocesses" which present a generic domain independent of the application. From these, skills has been the subject of taxonomy (integrated skills) to define a scale of difficulty levels on the cognitive, affective and motor.
3) Public Target: description of actors, their characteristics, their functions and tasks.

The proposed model is used and applied at the University of Mauritius to all its undergraduate programmes. It is important to identify a set of core competencies which are easily reachable within the context of any professional field of practice. Several meetings are organised with professionals coming from various sectors of the economy to define the learning competencies that can be achieved in the work place. Seven competencies which students can develop at any practice setting are identified as follows:

(1) **communication** involving communication systems, channels, direct interaction;
(2) **team working** including collaborative work;
(3) **improving own learning and performance** involving the process of own learning, performance, achievement and progress against set targets;
(4) **problem solving** involving the use of techniques and approaches to tackle problems;
(5) **using and applying numbers** including the range of tools which are used in the work place to handle numbers;
(6) **using information technology** including relevant IT tools and resources;
(7) **professional development** involving the ethical, legal and professional elements of practice.

Learning Outcomes to be achieved are then derived for each of these competencies. A robust mentor's preparatory programme are put in place in order to equip the professionals from the

industry to conduct, monitor and assess the students for these competencies on eventual placement. Based upon Grant, G et al [5] and Raven, J et al [6] statements as mentioned above, an assessment grid detailing the level of achievement is prepared to guide mentors in making proper formative assessment in the first instance (Refer to Annex). In addition, Demeuse, M et al [15] consider that the assessment focuses on the skills of learning products, but also reserves special attention to the modus operandi of the learner, the way it mobilises and organises the various resources (cognitive, conative and motor) to solve the problem situation which is asked. Indeed, assessing how the matter proceeds to overcome an obstacle is to evaluate the degree of adaptation and autonomy. To achieve the objective of the evaluation, the learner must be aware of its terms (contract), and the criteria and indicators of evaluation should be a dialogue's object between the mentor and learner. These are detailed, agreed and recorded in the student's portfolio. The place of the portfolio is very important as a potential actor in the learning system. The portfolio is designed in a competency based approach and includes mapping the knowledge and skills of the learner. Evidence of achievement for each learning outcome is recorded in the portfolio by the learner. The mentor perform a formative assessment of the seven competencies developed by the student mid-way during the training programme. This allow the student to develop self confidence for competences where he is excelling and also make the student devotes more effort to competences where he lacks skills & knowledge. The learner then submits his portfolio at the end of the training and the mentor on his side submits the summative assessment to the University under confidential cover. The learner's recorded evidence of achievement in the portfolio is used to moderate the mentor's summative marks before grading and awarding the respective credits to the student.

Conclusion

The model presented has proved to be successful at the University at Mauritius. The integration of the competency-based assessment in work-based learning is certainly beneficial in the learning process. Compared with the traditional approach where placement learning has no pre-defined structure, the competency based approach potentially leads to individualise flexible training, transparent standards, and increased accountability. The assessment methods are found to be fair and equitable. However for the model to function efficiently, it is seen that collaboration between the university and the mentors is of fundamental importance for enhancing the learning competencies in the working environment.

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Assessment Grid for Competencies

Competencies	Communication	Team Working	Improving Own Learning & Performance	Problem Solving Skills	Using & Applying Numbers	Using IT	Professionalism
70-100 %	- Demonstrates an excellent understanding of the communication systems, channels and tools which are used in the work place. - Gives an excellent description of how the different sections in the work place communicate. - Makes excellent contribution in defined aspects of communication	- Gives an excellent description of the mission, philosophy and goals of the work setting. - Demonstrates an excellent understanding of how the different teams contribute to the corporate mission and business of the allocated work place. - Makes an excellent description of own contribution to the allocated team in the work setting.	-Demonstrates excellent means of identifying own learning and development needs in coherent manners. -Makes excellent respond to constructive advice and guidance obtained. - Makes excellent plans for further learning and performance development.	-Demonstrates excellent understanding of the stages of the problem solving approach. -Makes excellent use of the process approach to resolve problems within the work environment. -Demonstrates an excellent understanding of the resources and tools which may be utilised in solving specific problems.	-Demonstrates an excellent understanding of how numbers are used in a range of activities in the work place. -Demonstrates an excellent understanding of the use of tools which are used to handle numbers. -Makes excellent use of numbers and excellent interpretation of numerical data to carry out relevant activities in the work place.	-Demonstrates excellent understanding of the range of IT resources available in the work setting. -Makes excellent use of the IT tools and demonstrates excellent understanding of their contribution in the work setting. -Seeks excellent opportunities to enhance own IT skills.	-Demonstrates excellent understanding of the key factors which foster professional relations. -Demonstrates excellent understanding of the ethical, legal and professional elements of practice. -Promotes excellent confidentiality in respect of the personnel, the business and activities within the allocated organisation.
60-69 %	- Demonstrates a good understanding of the communication systems, channels and tools which are used in the work place. - Gives a good description of how the different sections in the work place communicate. - Makes good contribution in defined aspects of communication	- Gives a good description of the mission, philosophy and goals of the work setting. - Demonstrates a good understanding of how the different teams contribute to the corporate mission and business of the allocated work place. - Makes a good description of own contribution to the allocated team in the work setting.	-Demonstrates good means of identifying own learning and development needs in coherent manners. -Makes good respond to constructive advice and guidance obtained. - Makes good plans for further learning and performance development.	-Demonstrates good understanding of the stages of the problem solving approach. -Makes good use of the process approach to resolve problems within the work environment. -Demonstrates a good understanding of the resources and tools which may be utilised in solving specific problems.	Demonstrates a good understanding of how numbers are used in a range of activities in the work place. -Demonstrates a good understanding of the use of tools which are used to handle numbers. -Makes good use of numbers and good interpretation of numerical data to carry out relevant activities in the work place.	-Demonstrates good understanding of the range of IT resources available in the work setting. -Makes good use of the IT tools and demonstrates good understanding of their contribution in the work setting. -Seeks good opportunities to enhance own IT skills.	-Demonstrates good understanding of the key factors which foster professional relations. -Demonstrates good understanding of the ethical, legal and professional elements of practice. -Promotes good confidentiality in respect of the personnel, the business and activities within the allocated organisation.
50- 59 %	- Demonstrates a satisfactory understanding of the communication systems, channels and tools which are used in the work place. - Gives a satisfactory description of how the different sections in the work place communicate. - Makes satisfactory contribution in defined aspects of communication	- Gives a satisfactory description of the mission, philosophy and goals of the work setting. - Demonstrates a satisfactory understanding of how the different teams contribute to the corporate mission and business of the allocated work place. - Makes satisfactory description of own contribution to the allocated team in the work setting.	-Demonstrates satisfactory means of identifying own learning and development needs in coherent manners. -Makes satisfactory respond to constructive advice and guidance obtained. - Makes satisfactory plans for further learning and performance development.	-Demonstrates satisfactory understanding of the stages of the problem solving approach. -Makes good use of the process approach to resolve problems within the work environment. -Demonstrates a satisfactory understanding of the resources and tools which may be utilised in solving specific problems.	Demonstrates a satisfactory understanding of how numbers are used in a range of activities in the work place. -Demonstrates a satisfactory understanding of the use of tools which are used to handle numbers. -Makes satisfactory use of numbers and satisfactory interpretation of numerical data to carry out relevant activities in the work place.	-Demonstrates satisfactory understanding of the range of IT resources available in the work setting. -Makes satisfactory use of the IT tools and demonstrates satisfactory understanding of their contribution in the work setting. -Seeks satisfactory opportunities to enhance own IT skills.	-Demonstrates satisfactory understanding of the key factors which foster professional relations. -Demonstrates satisfactory understanding of the ethical, legal and professional elements of practice. -Promotes satisfactory confidentiality in respect of the personnel, the business and activities within the allocated organisation.
40-49 %	- Demonstrates a limited understanding of the communication systems, channels and tools which are used in the work place. - Gives a limited description of how the different sections in the work place communicate. - Makes limited contribution in defined aspects of communication	- Gives a limited description of the mission, philosophy and goals of the work setting. - Demonstrates a limited understanding of how the different teams contribute to the corporate mission and business of the allocated work place. - Makes limited description of own contribution to the allocated team in the work setting.	-Demonstrates limited means of identifying own learning and development needs in coherent manners. -Makes limited respond to constructive advice and guidance obtained. - Makes limited plans for further learning and performance development.	-Demonstrates limited understanding of the stages of the problem solving approach. -Makes limited use of the process approach to resolve problems within the work environment. -Demonstrates a limited understanding of the resources and tools which may be utilised in solving specific problems.	Demonstrates a limited understanding of how numbers are used in a range of activities in the work place. -Demonstrates a limited understanding of the use of tools which are used to handle numbers. -Makes limited use of numbers and limited interpretation of numerical data to carry out relevant activities in the work place.	-Demonstrates limited understanding of the range of IT resources available in the work setting. -Makes limited use of the IT tools and demonstrates limited understanding of their contribution in the work setting. -Seeks limited opportunities to enhance own IT skills.	-Demonstrates limited understanding of the key factors which foster professional relations. -Demonstrates limited understanding of the ethical, legal and professional elements of practice. -Promotes limited confidentiality in respect of the personnel, the business and activities within the allocated organisation.

30- 39 %	- Demonstrates a poor understanding of the communication systems, channels and tools which are used in the work place. - Gives a poor description of how the different sections in the work place communicate. - Makes poor contribution in defined aspects of communication.	- Gives a poor description of the mission, philosophy and goals of the work setting. - Demonstrates a poor understanding of how the different teams contribute to the corporate mission and business of the allocated work place. - Makes poor description of own contribution to the allocated team in the work setting.	-Demonstrates poor means of identifying own learning and development needs in coherent manners. -Makes poor respond to constructive advice and guidance obtained. - Makes poor plans for further learning and performance development.	-Demonstrates poor understanding of the stages of the problem solving approach. -Makes poor use of the process approach to resolve problems within the work environment. -Demonstrates a poor understanding of the resources and tools which may be utilised in solving specific problems.	Demonstrates poor understanding of how numbers are used in a range of activities in the work place. -Demonstrates a poor understanding of the use of tools which are used to handle numbers. -Makes poor use of numbers and poor interpretation of numerical data to carry out relevant activities in the work place.	-Demonstrates poor understanding of the range of IT resources available in the work setting. -Makes poor use of the IT tools and demonstrates poor understanding of their contribution in the work setting. -Seeks poor opportunities to enhance own IT skills.	Demonstrates poor understanding of the key factors which foster professional relations. -Demonstrates poor understanding of the ethical, legal and professional elements of practice. -Promotes poor confidentiality in respect of the personnel, the business and activities within the allocated organisation.
0-29 %	- Demonstrates a very poor understanding of the communication systems, channels and tools which are used in the work place. - Gives a very poor description of how the different sections in the work place communicate. - Makes a very poor contribution in defined aspects of communication.	- Gives a very poor description of the mission, philosophy and goals of the work setting. - Demonstrates a very poor understanding of how the different teams contribute to the corporate mission and business of the allocated work place. - Makes a very poor description of own contribution to the allocated team in the work setting.	-Demonstrates very poor means of identifying own learning and development needs in coherent manners. -Makes very poor respond to constructive advice and guidance obtained. - Makes very poor plans for further learning and performance development.	-Demonstrates very poor understanding of the stages of the problem solving approach. -Makes very poor use of the process approach to resolve problems within the work environment. -Demonstrates a very poor understanding of the resources and tools which may be utilised in solving specific problems.	Demonstrates very poor understanding of how numbers are used in a range of activities in the work place. -Demonstrates a very poor understanding of the use of tools which are used to handle numbers. -Makes very poor use of numbers and very poor interpretation of numerical data to carry out relevant activities in the work place.	-Demonstrates a very poor understanding of the range of IT resources available in the work setting. -Makes a very poor use of the IT tools and demonstrates poor understanding of their contribution in the work setting. -Seeks a very poor opportunities to enhance own IT skills.	Demonstrates very poor understanding of the key factors which foster professional relations. -Demonstrates very poor understanding of the ethical, legal and professional elements of practice. -Promotes very poor confidentiality in respect of the personnel, the business and activities within the allocated organisation.
Mid Grade							