

Capabilities, constructivism and portfolios: working towards a fresh approach to curriculum design in management education

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While the identification of generic attributes expected of a graduate of a university is not uncommon few universities have actually documented a process for determining whether graduates have attained the attributes.

During 1998 Orange Agricultural College, The University of Sydney, underwent an Undergraduate Review in which a set of nine capabilities was identified as key expectations of a graduate of the various management education strands. In order to streamline the process and design ways of assessing the achievements of the capabilities, academics agreed on the following initiatives: embedding the capabilities into each unit of study; development of a portfolio to record student progress in each of the capabilities; an evaluation of the portfolios at the end of each year prior to either progression into the next year of study or for graduation; and a student/staff mentoring system.

The paper documents the philosophical underpinning of the capability program and outlines a number of operational components implemented in 1999. The program was introduced into the internal mode in 1999 and will be extended to the distance mode in 2000

Introduction

The Board meeting of the University of Sydney's Orange Agricultural College (OAC) on 8 April, 1998, was a watershed in OAC's development as a centre for rural management education. On that occasion OAC began building a framework around its definition of learning² by agreeing to align the concepts of constructivism and praxis in a capability based undergraduate program. This paper sets out to provide an understanding of the philosophical underpinning of the change towards a capability program and to document the key operational components.

Background

Orange Agricultural College (OAC) is one of the University of Sydney's seventeen faculties and colleges. OAC was established in 1973 to provide management oriented education to rural Australia focussing on agribusiness and land resource management. It now offers sixteen undergraduate courses (as well as a range of postgraduate programs). These include both advanced diplomas (two-year full time equivalent) and bachelor degrees (three years full-time equivalent, into which appropriate advanced diplomas are fully articulated). Degree students may be admitted to a fourth year honours program. This paper reports on renewal and reform of the undergraduate curricula.

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² Learning is a creative, active process in which information and experience are framed, meaning is constructed and which is a continuous lifelong process facilitated by open-mindedness, discussion and a stimulating environment.

Early in 1997 OAC initiated an Undergraduate Course Review. This involved a significant evaluation of our mission as a College dedicated to rural management education. Out of this complex process a number of significant changes were recommended. These included the intention to reduce the number of units of study offered – with a reduction later achieved of 120 to 80 – and to adopt the concept of capability as an appropriate generic descriptor of the outcomes sought in OAC graduates. OAC thinking was guided by the work of Professor Len Cairns (1997a, b) and by publications of the Australian Capability Network.

After considerable debate nine capabilities were identified and adopted at the historic April meeting (Table 1). During the later part of 1998 staff worked in teams to review each unit to be offered in Semester 1 of 1999, to establish the capabilities to be addressed, and to design appropriate assessment items to ensure the attainment of those capabilities. Critical also was a decision to adopt a portfolio approach as a mechanism for monitoring a student's progress in developing each of the capabilities.

Capabilities expected of graduates of Orange Agricultural College, The University of Sydney
1. Apply creative and critical thinking processes
2. Develop communication abilities by connecting with everything involved in communication: people, ideas, texts, media, and technology
3. Work with, manage and lead others in ways which value their diversity and equality and which facilitates their contribution to the organisation and the wider community.
4. Acquire and apply appropriate management, technical and practical skills, and knowledge
5. Display a confident but realistic judgement of one's capacity to achieve.
6. Recognise and accept continuous learning as being central to one's capacity to realise potential and live a fulfilling life.
7. Hold personal values, beliefs and ethics necessary for a sustainable and healthy planet.
8. Hold a perspective which acknowledges local, national, and international issues.
9. Value a citizenship role which is connected to and responsible for the social, environmental, political and economic systems in which we live.

Table 1: Orange Agricultural College's nine graduate capabilities

Learning at OAC: What constructivism tells us

OAC's definition of learning confirms that learning is a meaning-making process. Through this definition we place the onus of learning on our students. It is up to them to make sense of their world. It is up to them to construct their reality. It is up to us as teachers to assist them with this construction. This definition doesn't dispense with the dissemination of information process but that process is subsumed within the process we refer to as meaning-making.

What we are dealing with here is the nature of knowledge. In this respect two broad theoretical traditions of objectivism and subjectivism can be distinguished (Biggs 1996). In the objectivism tradition the world separates into the duality of the knower and the known, the subject and the object. Knowledge, therefore, is separate from the mind but is transferred “inside the mind” (Bednar et al 1992). By this process “The world is mind independent (i.e. the same for everyone) and we can say things about it that are objectively, absolutely and unconditionally true or false” (Bednar et al 1992, p.20). In educational terms this is often translated into a traditional, didactic, linear approach to teaching where information is transferred from teacher to student. This is still the dominant theory-in-use today and has its links with positivism and quantitative measurement (Biggs 1996). OAC’s origins were in agricultural and management science, and it is still highly influenced in its management education by a theory-in-use which favours the objectivist tradition. This is not unusual given that management education, in general, has its origins in the applied sciences. In Figure 1 Locke (1989) illustrates the evolution of management education under the influence of the applied sciences.

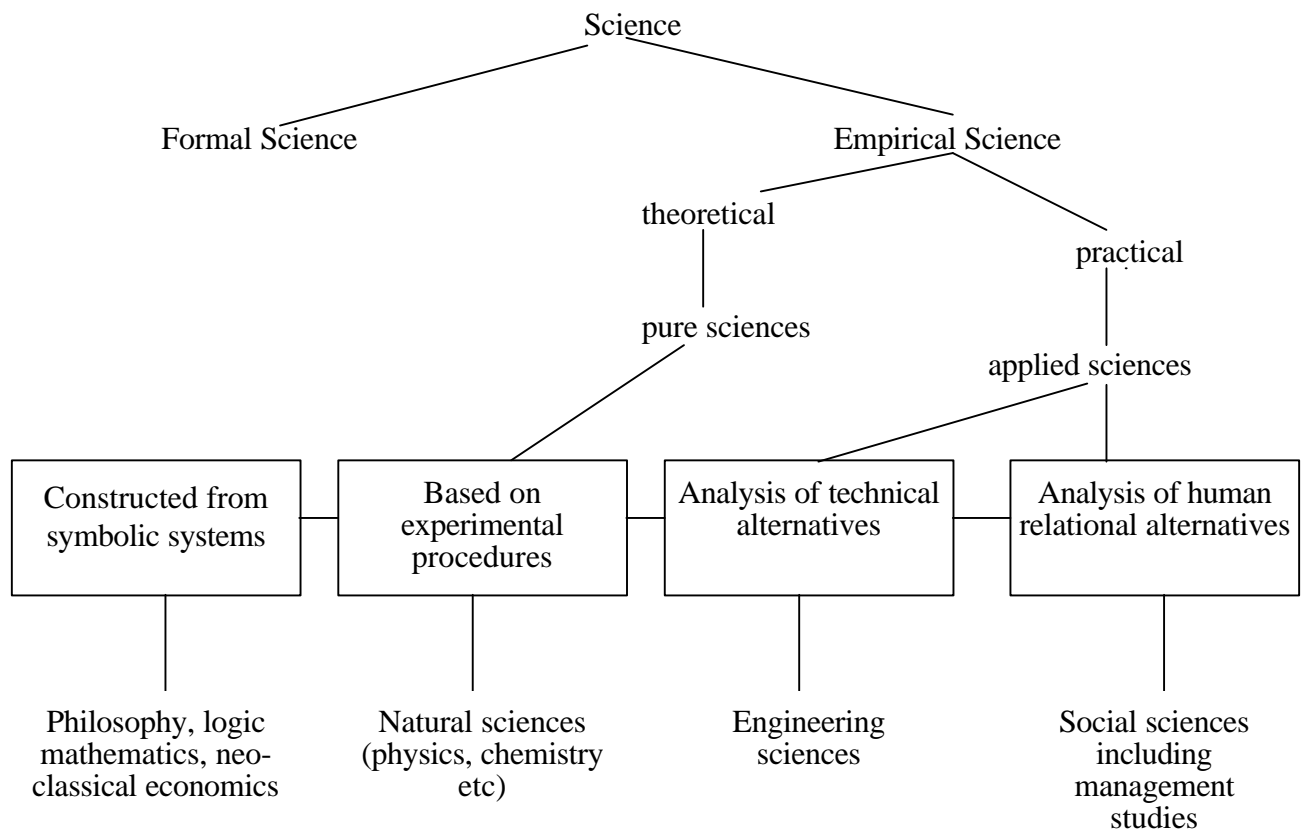


Figure 1. The evolution of management education (Locke, 1989)

For many management educators originally trained in the applied sciences the move from an objectivist tradition (positivist science) to accepting a more pronounced subjectivist (constructivist) framework is not easy. This change is needed, however, to embrace the definition of learning and associated frameworks of constructivism and praxis.

The second tradition, subjectivism, and its framework of application, constructivism, “rejects dualism, claiming rather that meaning is created by the learner, not imposed by

reality or transmitted by direct instruction” (Biggs 1996, p.348). The learner is central to the learning process in this tradition. In the constructivist process “learning is an active process in which meaning is developed on the basis of experience” (Bednar et al 1992, p.21). The emphasis is on the manner in which humans interpret their world and make sense of it through sharing personal perspectives that are built on experience. Management education is connected not only with the external world, but also, through the decision making process which is central to management is aligned strongly with the subjective world of the manager.

OAC’s challenge is to relate these two traditions to educational strategies or theories-in-use. At OAC both traditions have been visible as theories-in-use but in an individual and sometimes disconnected way. Curriculum development discussions during the Undergraduate Review period were informed by staff development and curriculum discussion activities which addressed theories of learning and their relevance to current and future OAC curricula. A bridging construct linking a continuum of recognised learning theories with the objectivist-subjectivist framework proved useful (Figure 2).

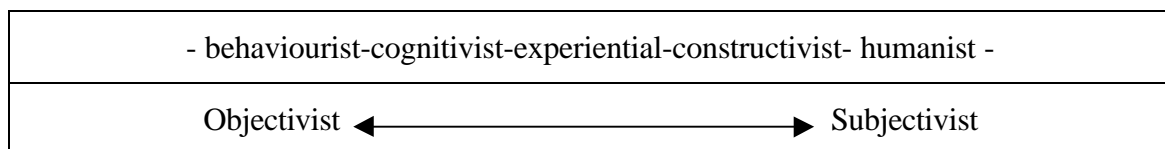


Figure 2: The Objectivist-Objectivist continuum of conceptual approaches to learning.

The outcome of this collegial debate was recognition of the value of a constructivist umbrella. Eclecticism could then flourish within the parameters of an agreed framework to meet the complexity of learning needs offered by a range of subject matter and a student group of diverse backgrounds and abilities. Figure 3 presents the resulting conceptual model underpinning OAC’s current curriculum planning.

At the behaviourist-cognitivist end of this continuum, thinking is based on the objectivist tradition (Bednar et al 1992) where the goal of instruction is to transfer knowledge to learners in the most efficient means possible. The emphasis is to accept the knowledge, skills and attitudes as developed as a critical component of learning. Friere’s famous banking analogy (1972, p.45-46) captures this point of view:

‘Narration (with the teacher as narrator) leads the students to memorise mechanically the narrated content. Worse still, it turns them into ‘containers’, into receptacles to be filled by the teacher. The more completely he fills the receptacles, the better a teacher he is. ... Education thus becomes an act of depositing, in which the students are depositories and the teacher the depositor. Instead of communication, the teacher issues communiqués and ‘makes deposits’ which the students patiently receive, memorise, and repeat. This is the ‘banking’ concept of education, in which the scope of action allowed to the students extends only as far as receiving, filing, and storing the deposits.’

The ‘truth’ that was evident in Friere’s judgement in the 1960s has not yet altered the power structures that exist in educational institutions to enable a movement towards the humanist-constructivist end of the continuum.

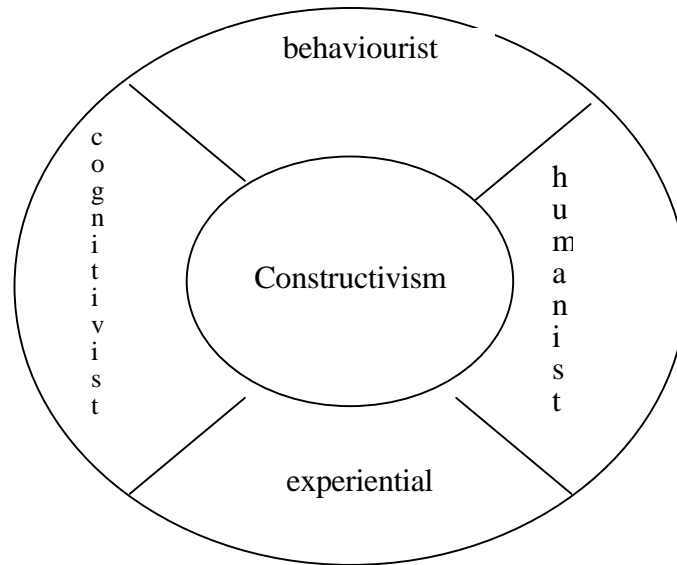


Figure 3: Conceptual model underpinning OAC's curriculum development

Where does praxis fit?

Praxis conceptualises a relationship between action and theory where neither action nor theory predominate; what predominates is the relationship existing between the two (Mezirow 1991). Significant in praxis is development of the two contrasting reasoning skills: inductive reasoning when moving from action to theory, and deductive reasoning when developing action from theory. In a praxis approach to learning we are in a better position to develop these contrasting reasoning skills. The praxis approach to learning is also a fundamental component of experiential learning. The emphasis on critical thinking in Capability 1 (Table 1) leads to developing students' ability to think in both the inductive and deductive modes; this suggests praxis as central to the curriculum.

Is praxis viewed differently by academics in relation to their position on the objectivist-constructivist continuum? Experience suggests that this is the case. Objectivists will tend to view praxis as task focused activity which is removed from a strong sense of personal meaning making. This emerges through the emphasis they place on understanding the external world. Constructivists, on the other hand, will ask questions about the meaning of the task, how it fits in with existing conceptions, and how these conceptions differ from others. Often this is achieved through dialogue in which there is continual re-assessment of the meaning of an issue.

This has significance in the design of educational programs. If the guiding framework is constructivism, and praxis is central to this framework, students must be constantly encouraged to reflect on their experience and to rely not so much on the views of experts but on their own constructions. Because this needs to happen within units and across courses all academic staff must be encouraged to work across the continuum presented in Figure 2.

What do we mean by capabilities and how does this meaning relate to constructivism?

There is increasing emphasis on the so-called generic attributes expected of university graduates³. These attributes are also likely to reflect the expectations of industry (Industry Task Force on Leadership and Management Skills, 1995). Close reading of these places them in the academic realm of capability development.

Stephenson describes capability as “having justified confidence in your ability to (1) take appropriate and effective action, (2) communicate effectively, (3) collaborate with others, (4) learn from experience, within familiar and unfamiliar circumstances” (1995, p.24). A capability based education program therefore equips students to take charge of their personal, vocational and educational development. It concerns itself with the development of the autonomous learner (Stephenson 1995; Cairns 1999).

Many of the features of OAC’s capability approach are reflected in this statement by Stephenson & Weil (1992, p.168):

“To engage students in critical dialogue about fundamental concepts, to be open about their own struggles with particular content areas, to share the pain of excitement of what it means to be a scholar, to help students to find their way through the growing mass of references and information sources, to test assumptions against practice, to help students ‘talk it through’, and to explore the provisional nature of what we currently accept as knowledge are more challenging and intellectually satisfying activities than the sterile communication of ‘certain’ knowledge and information. A capability approach far from de-skilling specialist academics, can give new status to their scholarship; for good measure it prepares students for learning for the rest of their lives.”

While the word constructivism isn’t used in these descriptions of capability there can be little doubt that we are talking the same language. OAC is, by the development of a capability approach, implementing a constructivist approach to learning. The two approaches are congruent. While alignment exists between capability and constructivism the same cannot be said for behaviourism and constructivism. Biggs (1996) suggests that the two are incompatible. Bednar et al (1992, p.21) concurs: “Constructivism is completely incompatible with objectivism. We cannot simply add constructivist theory to our smorgasbord of behaviourism and cognitive information processing”. Bednar appears to be suggesting that people are either in one camp or the other, and to straddle both camps is not possible. Stephenson and Weil support this position based on their definition of capability: Capability is “an integration of specialist expertise, personal skills, self-esteem and values and can only be satisfactorily demonstrated through the effectiveness and appropriateness of actions taken, the explanations given, the support and cooperation achieved, and the learning derived from the experience” (1992, p.190). According to Stephenson any attempt to assess students with “predetermined, separately tested and objectively measured personal skills and qualities” will not enhance capability.

Luckett and Luckett (1999) in commenting on the capability program at the University of Natal, South Africa also make this point. They compare the two approaches at their

³ The University of Sydney’s generic attributes of graduates can be found at http://db.usyd.edu.au/cid/document/current/00102_001.stm?doc=00102&ver=001.

institution used to educate students in the School of Rural Community Development. The two approaches are the aggregated and the integrated as in Figure 4:

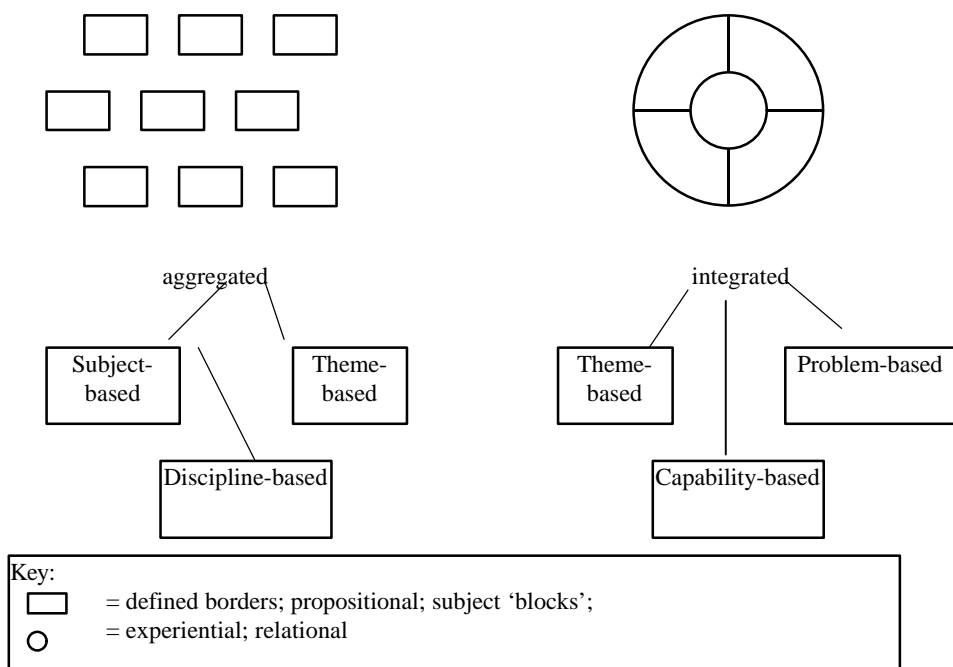


Figure 4: Aggregated and Integrated models (Luckett and Luckett 1999)

Figure 4 illustrates a clear distinction between the traditional discipline-based approach to learning and a problem-based capability program. At OAC we have challenged the very basis of this model by introducing a capability program but within the framework of an aggregated or unitised approach. The position taken at OAC is that while we need to be sensitive to the difficulties we do not need to be put off by the size of the task. Can we resolve these tensions? The challenge before us is to develop a resolution that comes to terms with the subjectivist - objectivist divide. Our context and circumstances offer us the chance of a special breakthrough. The most promising vehicle for such a breakthrough is a student capability portfolio. By this mechanism students could integrate the knowledge emerging from the various units of study.

The challenge therefore was to take the OAC curriculum structure as it had evolved, to make the most of its unitised structure, and to integrate the holism implied in the definition of learning and the capability approach. All courses are tied to OAC's educational mission through the nine capabilities (Table 1). Students undertake a program of study that includes core, course selection and optional units. Core units are prescribed. Students must choose course selection units from a prescribed pool, which offers some latitude of choice. Optional units may be selected from the entire OAC pool or from programs offered elsewhere (with permission).

Gradual development of constructivism in the new OAC curriculum

When students arrive at OAC they generally bring a pattern of learning born from the teacher-directed framework that predominates in secondary education. To ‘throw them in the deep end’ into a constructivist framework would create difficulties. Jonassen et al (1993) propose the strategy of easing students into a constructivist deeper learning framework. They argue that constructivist learning environments are most effective for the stage of advanced knowledge acquisition outlined in Figure 5.

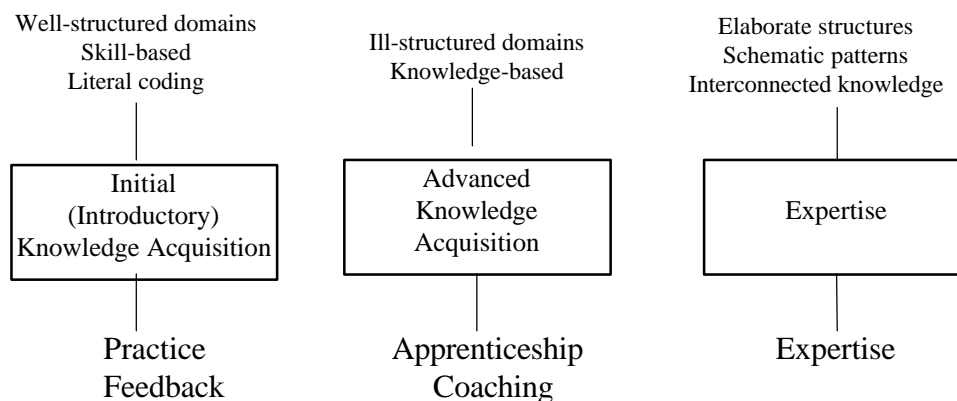


Figure 5: Three stages of knowledge acquisition (Jonassen et al, 1993)

“Introductory learning occurs when learners have very little directly transferable prior knowledge about a skill or content area. It represents the initial stages of schema assembly and integration. The second phase of knowledge building is advanced knowledge acquisition, which is an intermediate stage in learning that follows introductory knowledge acquisition and precedes expertise” (Spiro, Coulson, Feltovich, & Anderson 1988, quoted in Jonassen et al 1993)

Learners must acquire advanced knowledge in order to solve complex, domain or context dependent problems.

OAC has chosen to move slowly towards deeper learning strategies involving constructivism. Yet the achievement of deeper learning strategies and the familiarisation of students with them are central to the development of capabilities. The faster we can wean students off teacher-dependent systems the more rewarding it will be for students and staff alike and yet we need to be highly sensitive to the rate at which this happens. In a three year degree program (full-time equivalent) it might be expected that Knowledge Acquisition might occupy common teaching strategies in the first stage of study moving though to Expertise and associated interconnected knowledge in the later stages.

The need for real world experience

The essential ingredient of a capability/constructivist approach to learning is for students to construct their own knowledge and frames of reference through individual and social activity (Biggs 1996). One of the best vehicles for this is engaging in “real world” experience. Whilst students studying at OAC do engage in real world experience within the unitised approach, particularly in the distance learning mode, it is debatable as to whether this represents a holistic engagement. While the unitised approach doesn’t

This discussion suggests that we have entered a different educational environment. Through the intended development of capabilities, and the emphasis placed on constructivism and praxis, the thrust of OAC's educational practices is now squarely towards a more learner-centred approach. While learner-centredness has been OAC's goal for some time the educational strategies to ensure this objective is achieved have now been clearly articulated.

Entering this new territory leads to new thinking about appropriate (and therefore perhaps different) assessment strategies. In a unitised curriculum assessment clearly starts within units. However, in the case of capabilities, where a student might be developing a capability through an involvement in several units (and perhaps other life experiences), a mechanism needs to be developed to ensure that the student is able to demonstrate achievement with respect to that capability across a range of units of study. One mechanism for achieving such an outcome is the portfolio.

Using the portfolio approach to support and monitor capability development

A portfolio⁴ type approach can act as a catchall for a student's efforts in respect of each of the nine capabilities if suitably designed. This is illustrated in Figure 7 which shows the portfolio as the final means of capturing all that the student has achieved through the six streams of engagement. In Box A, for example, there will be a variety of teaching and learning strategies used; this reflects the eclectic nature of our approach to learning. Different approaches are adopted depending on the nature of the material covered within a unit of study (and on the epistemology and teaching style of the staff concerned). In boxes B - E the overall educational label would more likely be that of constructivism where students are provided with considerable freedom to explore issues of interest. In this model the portfolio is a critical component because it provides students with an ideal opportunity to construct (as in constructivism) stories about their learning over the nine capabilities, drawing together their learning in the six streams of experience.

⁴ The concept of a portfolio has been widely interpreted (see, for example, Brown & Maher, 1992; Reid, 1998). This section sets out OAC's determination of its role.

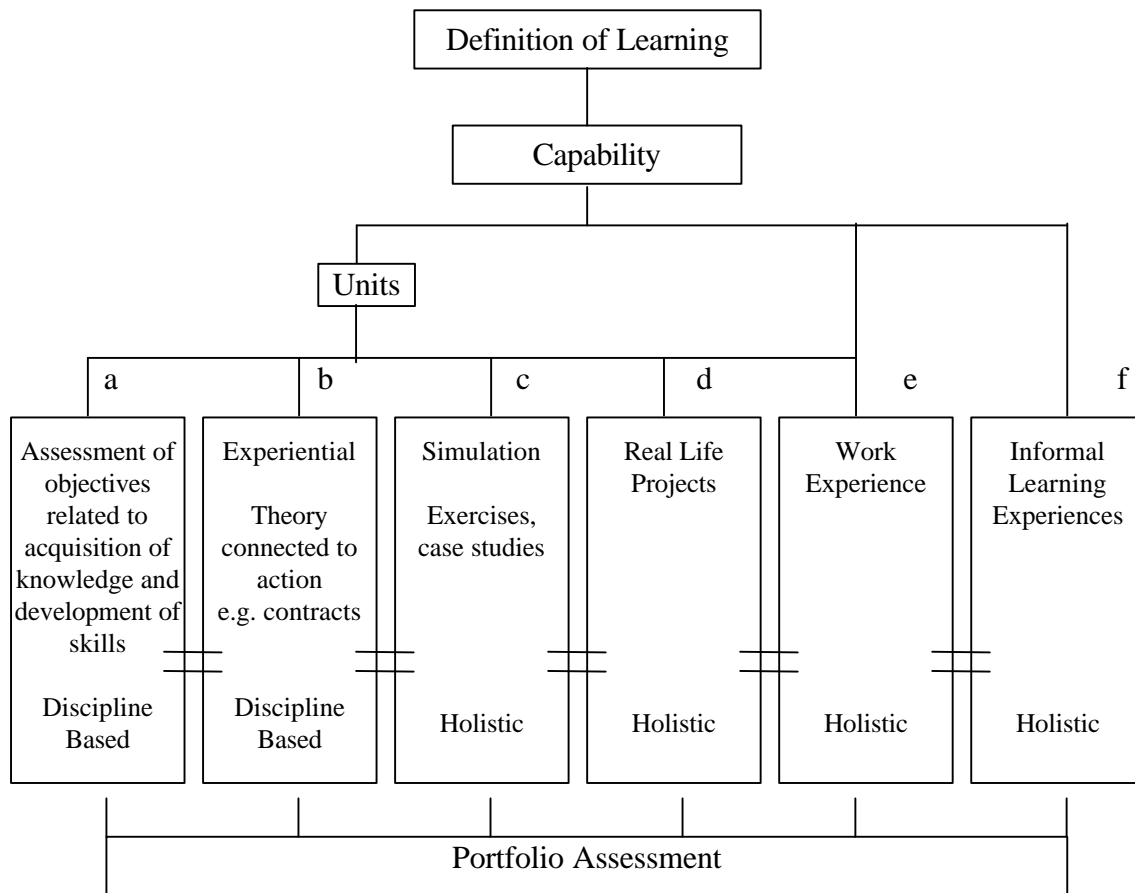


Figure 7: Flow chart of capability development and assessment

The portfolio has five specific purposes, enabling students to:

- Identify ‘within unit’ development of capabilities.

The unit of study provides a significant building block for the development of student portfolios. Through unit assessment students are able to determine their progress in relation to each stated capability. They will be expected to draw on material from the units as evidence of achievement in relation to the capabilities.

- Integrate ‘across unit’ learning experiences.

Students are expected to collect evidence of capability development from the units studied and synthesise this in order to demonstrate attainment of the capabilities. How students collect the evidence and argue their cases is only limited by their imaginations.

- Capture 'out of unit' experiences.

Students are able to develop their capabilities through a variety of experiences (Figure 7). A significant contributor can be informal learning. This might express itself for internal and distance students through involvement in:

- Sporting and cultural groups
- OAC committees (Students Representative Council, College Board, Education Committee)
- Industry experience
- Workplace activities
- Community service

- Personalise their capability development in a career context.

Industry leaders have stated that they seek graduates with the capabilities that OAC seeks to develop in its students. OAC graduates may well have a competitive advantage in the market place if they can claim not only a demonstrated body of knowledge in a chosen field of study but also the capabilities as outlined.

- Demonstrate commitment to life-long learning.

Students are expected to grow in their achievements at OAC. This growth in knowledge, skills and attitudes will be represented in the work in their portfolios. Through the synthesis and reflection process students will come to appreciate that each of the capabilities, and their respective levels, do not represent end points as such but continuums which need life-long attention.

Expectations of capability development and its representation in the portfolio increase with each academic award (OAC local recognition, Advanced Diploma, Degree, Degree with Honours). Students are expected to present their portfolio for either progression into the next year of study or for graduation. It is expected that the portfolio will be assessed by a panel of three, one of whom will be an industry representative. To graduate students must complete the required number of units satisfactorily and present an acceptable portfolio. Because each form of assessment has somewhat different intentions, satisfactory achievement in one does not imply automatic satisfactory achievement in the other.

The Role of the Academic Advisor

An important mechanism for managing the capability program is the creation of an academic advisor system. The Academic Advisor is responsible for a group of approximately twelve students. The groups are expected to meet at least three times a semester to discuss issues of concern. Experience with commencing undergraduate students generally suggests that students may initially be confused by the expectations of capabilities and how they are to be measured. They may be 'lost' if they are not given close supervision and clear direction at the beginning of their studies at OAC. The Academic Advisory Group will guide the students through the early stages until they gain an understanding of the process. It will also provide an opportunity to develop a feeling

of belonging to the community of learners at OAC, and to build a relationship with the Academic Advisor.

Conclusion

OAC's challenge is similar to that facing many other university programs. The institutional environment is one shaped by history, academic culture, and pragmatic responses to the needs of students, industry and professions, the organisation and government. Academic staff must feel a sense of ownership of planned change. Students, parents and employers must see that it makes sense in the light of their expectations. Curriculum change, to be successful, must be planned and implemented in this context. OAC's curriculum renewal process has acknowledged all these factors as has been discussed in this paper.

The combination of a discipline-based, content-driven curriculum with a holistic capability-portfolio approach presented here offers students a rich and multi-textured learning experience. Through the unitised curriculum students progressively hone their technical knowledge and thinking skills. Through the capability-portfolio program they personalise their learning and start to see what it means to "construct oneself". A praxis approach ensures theory and action are closely associated in an environment of real world experience.

At OAC this approach is being implemented in 1999. New synergies in educational approach are expected to be achieved through synthesis of the objectivist and subjectivist/behaviourist and constructivist traditions with positive learning outcomes for both students and staff.

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