A model for learning development

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Abstract

This article looks at the way in which people perceive learning and the impact of these perceptions on teaching methods within the context of learning development in distance education. The context could, in fact, be any type of teaching and learning environment. The point is to balance approaches to teaching and learning depending on student profiles, the purpose of the learning, the resources available, etc. Teaching needs to be informed by research into learning as well as into the disciplinary area: both types of research lead to more scholarly teaching. Learning development is of primary interest to lecturers in higher education but also to teams that work on course development including instructional designers in distance education or multimedia designers. It is also of interest to managers who need to plan resources and environments that support optimal student learning. The Institute for Curriculum and Learning Development at the University of South Africa is particularly concerned with learning theories and how they impact on instructional design and learning development within a team approach. A model needs to show the phases of the curriculum and learning development cycle and the quality assurance measures that infuse it.

Ask what learning is and you will receive a variety of answers including, despite evidence to the contrary, that learning is the process of receiving knowledge from the teacher and memorizing it. For many, learning comes from exposure to books; for others it results from social interaction. For yet others it involves experiential learning in the workplace. Siemens (2006) envisions learning as connectivity, as shown in Figure 1.

Siemens (2005c) explains connectivism as follows:

> Connectivism as a learning theory provides insight into the dynamics of networks, environments, and ecologies in relation to accretion learning. It consists of the following principles:
> * Learning and knowledge rest in diversity of opinions.
> * Learning is a process of connecting specialized nodes or information sources.
> * Learning may reside in non-human appliances.
> * Capacity to know more is more critical than what is currently known. "Know where" replaces "know what" and "know how".

(George Siemens. 2006. *Knowing Knowledge.* Accessed on 9 January 2007 at
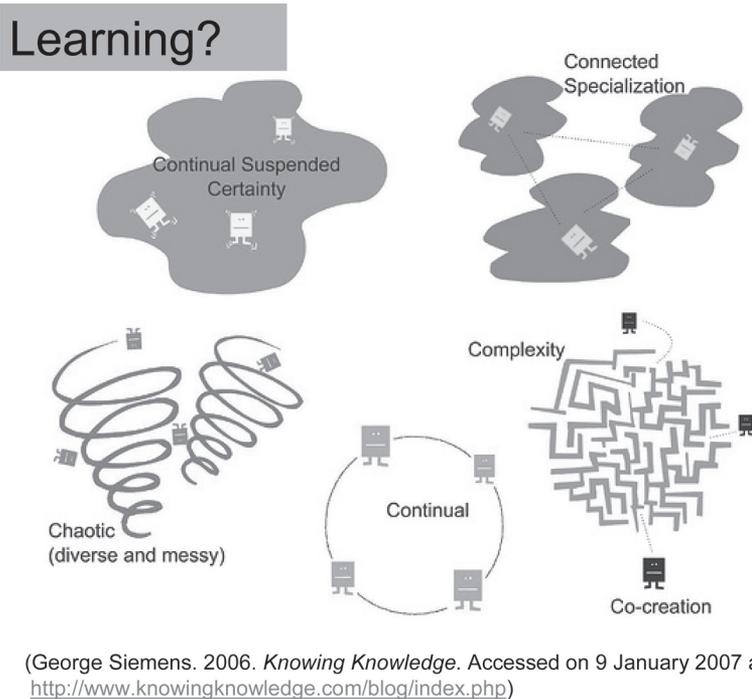http://www.knowingknowledge.com/blog/index.php)

Figure 1:

- Nurturing and maintaining connections is needed to facilitate continual learning.
- Ability to see connections between fields, ideas, and concepts is a core skill.
- Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
- Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.

Learning ecologies are defined as follows:

ecologies possess numerous characteristics that need to be attended to in the design process. The following components should be present in an ecology:
- A space for gurus and beginners to connect (master/apprentice)
- A space for self-expression (blog, journal)
- A space for debate and dialogue (listserv, discussion forum, open meetings)
- A space to search archived knowledge (portal, website)
- A space to learn in a structured manner (courses, tutorials)

- A space to communicate new information and knowledge indicative of changing elements within the field of practice (news, research) (Siemens 2005c).

In various publications Siemens (2005 a, b, c; 2006) argues that learning happens. Perhaps the clearest definition is the following:

> Learning is a continual process in which knowledge is transformed into something of meaning through connections between sources of information and the formation of useful patterns, which generally results in something that can be acted upon appropriately, in a contextually aware manner.

Siemens (2005c, 2006) also looks at various types of knowledge to which students need to be exposed:
- Know what (knowing about)
- Know how (knowing to do)
- Know where
- Know why (knowing to transform)
- Knowing to be (to embody knowledge with humanity, to be an ethical person).

A shift in perspective is clearly indicated if we believe, with Siemens (2006), that 'Knowledge is not intended to fill minds. It is intended to open them'.

Siemens' models are used for this article as they do not favour one extreme or the other but focus rather on when different teaching methods might be used to accommodate different purposes. In his various publications he discusses learning development in relation to learning domains and theories and his ideas (2005c) are collated in Table 1.

As can be seen from Table 1, there is a place for transmission in higher education but it should be limited to foundational knowledge and diminish in the higher levels particularly. Table 1 also captures the implications for learning development of each approach. How learning development takes place might vary from institution to institution with lecturers solely responsible at some universities but with other universities providing lecturer support or advisory services. At the University of South Africa we have an Institute for Curriculum and Learning Development (ICLD) that assists lecturers to develop material for open distance learning (ODL). The staff includes trained instructional designers, curriculum developers and education specialists. Siemens indicates that the transmission model lends itself to learning from courses and instructional design techniques although many practitioners will point out that they have adapted their disciplines to more constructivist approaches. In South Africa, outcomes-based education also lends itself to the first approach although the emphasis is not content.

Table 1: Learning development in relation to learning domains and theories

Accretion Learning is continuous/ embedded 　Function of the environment 　At the point of need 　Variety of sources: 'learning foraging' Theory: Connectivism Benefits: Link to need, high relevance, broad range of learning, continuous, modelled after real life Drawbacks: Students unaware of learning, unfamiliar with process Learning development focus: create networks, ecologies, environments	**Transmission** Traditional view of learning 　Knowledge-in-containers 　Instructor-in-control: 'sage on the stage' Theory: Behaviourism and cognitivism Benefits: Good for structured information, building core/ foundational competence Drawbacks: Instructor-based, learners as 'container to be filled', long development time, at odds with how much learning happens Learning development focus: instructional design; high organizational control of structure and content
Acquisition Student chooses to learn 　Exploratory 　Inquiry-based Theory: Constructivism and connectivism Benefits: Highly motivated because relevant Drawbacks: May not learn 'right' things; no expert feedback; students from disadvantaged backgrounds do not use resources optimally Learning development focus: provide rich resources	**Emergence** Student reflection and reasoning 　Metacognition, cognition, whole person 　Reflection on life experience 　'Guide on the side' Theory: Constructivism and cognitivism Benefits: Deep learning, relevance, HOTS Drawbacks: Time-consuming, students need high competence in subject matter and familiarity with approach Learning development focus: foster reflection and create REALs

ICLD has a number of objectives but the most relevant one will be discussed here: 'Collaborate on curriculum and learning development projects'. Some of the dimensions of the objective are:

- Clear understanding of PQM in relation to rich environments for active learning (REALs)
- The 20% of courses within each College with the highest enrolments … re-developed using a team approach …
- All courses whose lecturer/tutor to student ratio is at most 40:1 … have an active discussion forum on myUnisa and a resource section for students.
- Courses include relevant media in a blended approach …
- Courses planned from the start to integrate student support …

ICLD is thus about helping lecturers to help students learn from predominantly printed material but in a blended approach that includes online, multimedia and contact. We strive to create rich environments for active learning, or REALs, which are comprehensive instructional systems that evolve from and are consistent with constructivist philosophies and theories. To embody a constructivist view of learning, REALs:

- promote study and investigation within authentic contexts;
- encourage the growth of student responsibility, initiative, decision making, and intentional learning;
- cultivate collaboration among students and teachers;
- utilize dynamic, interdisciplinary, generative learning activities that promote higher-order thinking processes to help students develop rich and complex knowledge structures; and,
- assess student progress in content and learning-to-learn within authentic contexts using realistic tasks and performances (Grabinger and Dunlap 1995).

They thus suit emergence and acquisition domains and could promote connectivism as well. Siemens (2005c) argues:

> Designers benefit by expanding their view of the object of their design. Instead of seeing instruction as the only object of design, a designer's perspective can be enlarged by seeing the environment, availability of resources, and learner capacity for reflection, as potential objects of a design process and methodology.

From a learning development point of view, there are questions that we can ask about each learning domain as envisaged by Siemens. In working with lecturers the ICLD staff might find it more constructive to pose questions that open curriculum and learning spaces rather than pronounce on what is best or right. So, for the transmission domain we could ask the following:

- How do we cater for knowledge gaps and core knowledge acquisition?
- What is the balance between the different learning domains in a first-level course compared to third-level or postgraduate?
- How do we ensure that students are learning the 'right' things in relation to a core of knowledge in the discipline?

Questions that would open the emergence space could include the following:
- How do we design to include student knowledge and experience?
- How do we get students to reflect on what they are learning?
- How do we design so that students actively engage with the curriculum and construct knowledge?
- How do we improve students' metacognitive strategies?
- How do we include the whole person? (cognitive, emotional, spiritual, social)

Acquisition actually requires a resource-rich environment so we need to ask questions such as the following:

- What knowledge resources can the university supply to compensate for environments that are not resource rich?
  - Library
  - Multimedia
  - Online resources
  - Lecturers/ tutors
  - Fellow students
  - Work-integrated learning
- How can we include experiential/ problem-based learning?

We might be particularly challenged to approach learning in a structured environment within the accretion domain which needs the learner to be situated within a particular environment. However, we can ask questions during the design and development process such as:

- How do we foster the ideal knowledge ecology to permit learning to occur?
- How do we provide students with a rich array of tools and information sources to use in creating their own learning pathways?
- How do we bring in the widest diversity of opinions?
- How do we design so that there is space in the curriculum for current, rapidly changing, networked knowledge?
- How do we develop the ability to see patterns and connections between fields, ideas, and concepts?

It is not impossible within a single course to include a blend of learning domains for students, as pointed out by Estelle van Rensburg, an Education Consultant in ICLD (2006, personal communication). In the higher education context all the domains should be attended to, in an integrated way. These domains will come into play in the situation naturally, without necessarily being consciously 'designed in'. For instance, students who have to do a project in a work-based situation will learn through

- accretion during the day-to-day work experience,
- transmission as senior colleagues or mentors tell and show them what to do,
- acquisition as they actively seek information in and beyond the work environment to complete the project, and
- emergence as they (either deliberately or spontaneously) reflect on what they have learnt and gain and synthesize insights.

All of these learning experiences can take place more or less simultaneously or at least in one situation.

Some lecturers work alone; others work in teams. If they have to fulfil all the roles of the educator listed below, many lecturers actually need a team to support their discipline-based knowledge with educational insights on what and how to

teach (adapted from the seven roles of the educator as laid out in the Department of Education document: Norms and Standards):

- Knowing your subject matter in depth [through]
- Being a scholar, researcher and lifelong learner;
- Mediating learning – connecting the student to the subject matter's knowledge, skills, attitudes and values – because your scholarship extends to teaching and learning and knowing how students learn;
- Interpreting and designing learning programmes and materials;
- Interacting with students on an affective as well as an intellectual basis in a pastoral role, giving guidance and orientation about ODL, study skills, careers, etc.;
- Assessing learning in a variety of appropriate ways because your scholarship in teaching and learning keeps you up to date on issues of assessment;
- Acting as a leader, manager and administrator for your courses.

There is another route for the lecturer who works alone to achieve scholarly teaching, as indicated in the Figure 2. When the only research conducted is the scholarship of discovery – innovative disciplinary research – then the influence on the PQM, curriculum and delivery could be content only when it comes to what to teach.
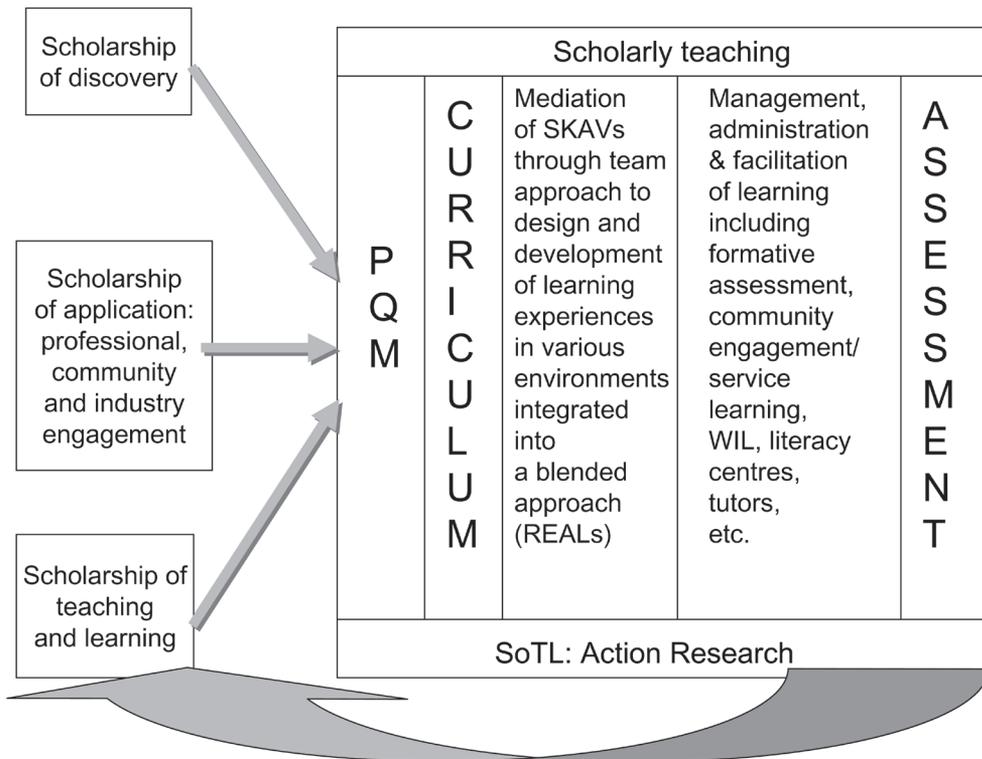

Figure 2

Broader scholarly activity, including research into teaching and learning, would result in more scholarly teaching. The value of the scholarship of teaching and learning is that it often involves cycles of action research providing feedback loops to further improve insights into what and how to teach.

Siemens suggests a learning development cycle in his article (2005c). It comprises five stages. Stage 1: Scope, includes Planning and Analysis. Stage 2: Creation includes three elements: Design, Development and Delivery. During Stages 2 and 3 (User experience), material is piloted. Stage 4 is labeled Meta-evaluation and involves reflection on the design process to ensure continued learning. Stage 5: Formative and summative evaluation, refers to assessment of students as well as student evaluation of the course. Siemens argues that the types of assessment traditionally used are only really widely used in a transmission approach. At Unisa we like to think of learning development being more directly linked to curriculum development and the spaces around curriculum. It is difficult to work on learning development if you do not have the context of how the curriculum was developed. In ICLD we believe that we can serve our clients best by being involved from the start of the project and being able to bring educational and open distance learning perspectives to the curriculum and learning development. We do not like to 'instructional design' finished text as the changes that we can make at this stage are largely superficial; with the best of intentions we cannot shift something conceived of as transmission fully into an emergence or acquisition domain. The model suggested in Table 2 also incorporates some uniquely South African elements and an underlying quality assurance practice.

Table 2: Learning Development Cycle

Curriculum Planning	Learning Design	Learning Development	Learning Facilitation	Impact
Analysis and planning Who are the subject matter experts? Who are the other stakeholders? What is the purpose? Link to university V&M Link to educational legislative environment and social, political and economic priorities Student profile Learning domain(s) Nature of content Student support needed Outcomes Delivery methods Timeframes Scope	Analysis and planning Student profile Link to student goals/motivation Module purpose, outcomes and assessment criteria Nature of the learning task Media/technology selection Rich environments for active learning (REALs) to foster engagement and reflection Resources Language Layout	Lecturers work on chosen media with assistance of relevant team members Interaction on drafts of print/multimedia/online sent to ICLD	Interaction with lecturers in any medium Tutors Group visits Online discussion forums Assignments and feedback Peer collaborative learning Literacy centres Study skills counselling Library resources Regional office resources	Data collection
Quality Assurance				
HEQC and Nadeosa criteria Understanding of learning Understanding of ODL	HEQC and Nadeosa criteria Understanding of learning Understanding of ODL	Piloting of material Critical reading Team approach	HEQC and Nadeosa criteria Understanding of learning Understanding of ODL	Surveys Student results Focus group interviews

In Unisa's learning model we would like to see a curriculum, and learning experiences and environments, that open minds. We would like to see student-centred learning mediation and facilitation. At a minimum, learning should be the result of the active construction of meaning in the context of REALs. This can be achieved through

a team approach to developing learning experiences and environments so that the selection of content aligns with defensible theories of learning, the nature of the discipline, the student profile for a particular course, stakeholder needs, planned outcomes, the Unisa 2015 Strategic Plan's vision and mission, and educational and socio-economic national imperatives.

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