Article

The clinical associate curriculum – the learning theory underpinning the BCMP programme at the University of Pretoria

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The Bachelor of Clinical Medical Practice (BCMP) is a new degree at the University of Pretoria (UP), designed to create a new category of mid-level medical workers, namely clinical associates. UP produced its first 44 graduates in 2011. The BCMP created the opportunity to innovate learning and teaching through designing, monitoring and evaluating the transformation of the curriculum as action research.

Drawing on the theories and practices of authentic learning, self-directed learning, whole-brain learning and collaborative learning, the curriculum has been transformed.

The potential of this curriculum extends beyond the formal education part of the programme – into clinical associate practice, healthcare practice and, potentially, general medical and healthcare education.

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The Bachelor of Clinical Medical Practice (BCMP) is a new degree designed to create a new category of mid-level medical workers for South Africa. It has been offered at the University of Pretoria (UP) since 2009. UP produced its first 44 graduates in 2011. Using the opportunity to innovate learning and teaching, the BCMP programme has also created an opportunity to design, monitor and evaluate the continual transformation of this curriculum through an action research-driven curriculum development approach.

As scholars in health science and higher education, we are aware of being knowledgeable about our practice, because 'if you really want to improve your own teaching, you must understand what that something is'.[1] The practice of healthcare, health science and health education is multidimensional. As such, it requires a complementary theoretical framework where a number of theories intersect to address this complexity. In this curriculum, we integrate the concepts of authentic learning, whole-brain learning, self-directed and self-regulated learning, as well as co-operative learning into a transformative educational model. To realise this conceptual framework, considerable emphasis is placed on facilitating learning and participatory action research.

Our approach is in keeping with the call made by the Commission on Education of Health Professionals for the 21st century for the education of health professionals to move into the 'third-generation' of educational reform. 'All health professionals in all countries should be educated to mobilise knowledge and to engage in critical reasoning and ethical conduct so that they are competent to participate in patient- and population-centred health systems as members of locally responsive and globally connected teams.'[2] They describe third-generation education reform as moving from informative to formative and then to transformative learning that results

in the development of healthcare workers who are change agents, or in the case of our context agents of transformation. This transformation is for the new graduates to change the way they look at health and social care (in its widest sense) so that these healthcare processes can lead to improved quality of care, improved health outcomes and being responsive to local contexts – not blindly applying evidence-based medicine out of context. Moreover, through 'novel forms of learning that transcend the classroom'[2] this approach to education is expected to produce greater numbers of healthcare professionals who will be able to address the global crises in inequity and health worker shortage.

Such transformative curricula and pedagogy challenge us to look not only to knowledge, skills and competencies but also to the way of being. This requires attention to human qualities, which can be acquired through authentic learning.[3,4]

Authenticity and education

As learning takes place in a highly complex world, education needs to address the nature of knowledge (epistemology), how knowledge is applied (practice), new meaning constructed and the way of being (ontology) in education.

Authenticity distinguishes between an internal human environment (inner being) and outer influences and realities. Authenticity and the way of being centre around identity. As a new profession clinical associate learners and practitioners constantly have to define for themselves and others who they are and what they do. The challenge of identity is central in the BCMP programme, for individual learners and the profession. Below, we set out some of the key concepts that inform our understanding and approach to learning in the BCMP curriculum.

Authentic learning

Authentic learning is not about finding things but finding ourselves.[5,6] In authentic learning being infuses doing, which promotes knowing as a process of constructing new meaning. For the BCMP curriculum this means that each learner creates his/her own understanding of the knowledge and skills needed for quality clinical practice and to deal with his/her own life and task as a clinical associate in the health team. In the BCMP curriculum the learners engage in patient care from the start of the course and it is through this practical engagement that they learn.

Components of authentic learning

Authentic learning requires whole-brain learning.[7] Whole-brain learning is one of an array of theories on learning styles.[8] It draws from research on how thinking, learning, creating, solving problems, communicating, etc. happen in the brain. According to De Boer *et al.*[9] the left hemisphere of the brain is involved in logical, analytical, quantitative and rational thinking, while the right hemisphere deals with conceptual, holistic, intuitive, imaginative and non-verbal thinking. Drawing from this understanding Herrmann[10] proposed a model of four quadrants where each quadrant relates to a complex of neural cortices, areas shown to be involved in thinking. While all four quadrants together form the thinking area of the brain, each quadrant has distinct clusters of cognitive functioning that play out differently in individuals. In other words, they give rise to differences in learning preferences and styles of facilitating learning between learners and between facilitators of learning that reflect specific brain functioning at an individual level. Whole-brain learning is about the need for a variety of learning methods to accommodate these differences. Since all varieties and combinations of these functions are present among any group of learners, facilitators of learning responsible for the design of learning opportunities need to acknowledge the particularity of individual learner learning preferences and plan flexible ways of facilitating learning.

Learning occurs within individuals and with and between other people and objects, i.e. it is both an individual and a social practice that extends beyond individuals to groups of people as a community of practice.[11]

Authentic learning also involves co-operative learning, which starts from the assumption that 'none of us is as smart as all of us'.[12] Co-operation is a central tenet of learning in the BCMP curriculum. This is both because it is a valued educational strategy and a critical part of the expected professional practice of clinical associates. They are expected to function in teams, under the supervision of medical practitioners while their position as mid-level clinicians, by definition, places them at the interface of different streams of professional thinking and makes them potential facilitators of interprofessional practice. Co-operative learning occurs when learners help one another to learn, maximising their own and each other's individual and collective potential.

Authentic learning is self-directed. Drawing on the theory of self-regulated learning, it occurs when individuals become active participants in their own process of learning, making conscious use of learning strategies and techniques to ensure that their learning goals are achieved.[13,14] In medical education, these essential skills of self-directed learning are required for success in academic and clinical contexts.[14]

Self-directed learning is integrated in meta-learning and co-operative learning through the mechanism of facilitated learning that takes account of whole-brain learning.

Learning as multiple cycles

All the abovementioned learning theories rely heavily on the concept of a learning cycle. Self-directed learning is typically conceptualised as a cyclical process with before (or forethought), during (or performance), and after (or self-reflection) phases (see Zimmerman[13] for a social-cognitive perspective on self-regulation). Similarly, co-operative learning involves group discussion of tasks and problems, identification of learning needs, active individual or group work, reflection and constructing of new meaning.

Authentic learning is also construed as cyclical in nature. According to Slabbert *et al.*[4] the authentic learning cycle starts with the learner's immersion in a real-life experience, followed by a (self-directed or facilitated) reflection on the experience, that in turn leads to the construction of the meaning of the experience by the learner. The cycle 'ends' with an exploration of a new real-life experience, where the learner uses the preceding experience(s) to do something creatively new.

In the BCMP curriculum, learning is understood as multiple cycles of executing tasks at individual learner and group level as well as for the healthcare teams in which they work.

Meta-learning

Learning about learning or meta-learning is also a constant feature in all the abovementioned theories. Meta-learning is higher-order, self-regulated authentic learning. It is the process by which individuals take control over and responsibility for their own learning. In whole-brain learning meta-learning is the individual's 'voyage of discovery', his/her journey to find out who he/she is, what he/she is capable of, and what meaning this has for his/her life as a professional.

In the BCMP curriculum, meta-learning is made visible and operational for both facilitators of learning and learners, so that it becomes a constant expectation of learning.

Facilitating learning

From the above, it should be obvious that authentic learning, whole-brain learning, co-operative learning and self-directed learning cannot be taught by traditional teaching methods. The historical practice in formal medical education is that knowledge is first taught or learnt through, often passive, information-based acquisition and then gradually applied through exposure to the real-life situations of clinical practice. A different approach is required which is inside-out (learner to real life) rather than outside-in (lecturer to learner) with emphasis on learning to be rather than learning to know.

In this paradigm, learning takes place through the activities of being, doing and knowing. In practice this means that the facilitator of learning needs to create learning opportunities that are meaningful and challenging. Real-life experiences are key to facilitating learning and are often the starting point of learning.

However, facilitating learning also needs to ensure that actual learning takes place, and that it is ongoing, progressive and cumulative.

Given established dominant practices, we recognise that it is extremely difficult for learners and facilitators of learning in the BCMP curriculum to radically redirect their practice towards facilitated learning that starts with 'real life'.

Facilitating learning is itself 'a *unique* professionalism with very distinctive characteristics regarding its purpose, functions, requirements, actions, and options. In fact, in a very concrete fashion and a significant sense, facilitating learning is the direct opposite of the concept of teaching.'[4]

The notion that facilitation is an integral and a necessary part of authentic learning means that it is an integral part of how the BCMP curriculum is constructed and practised.

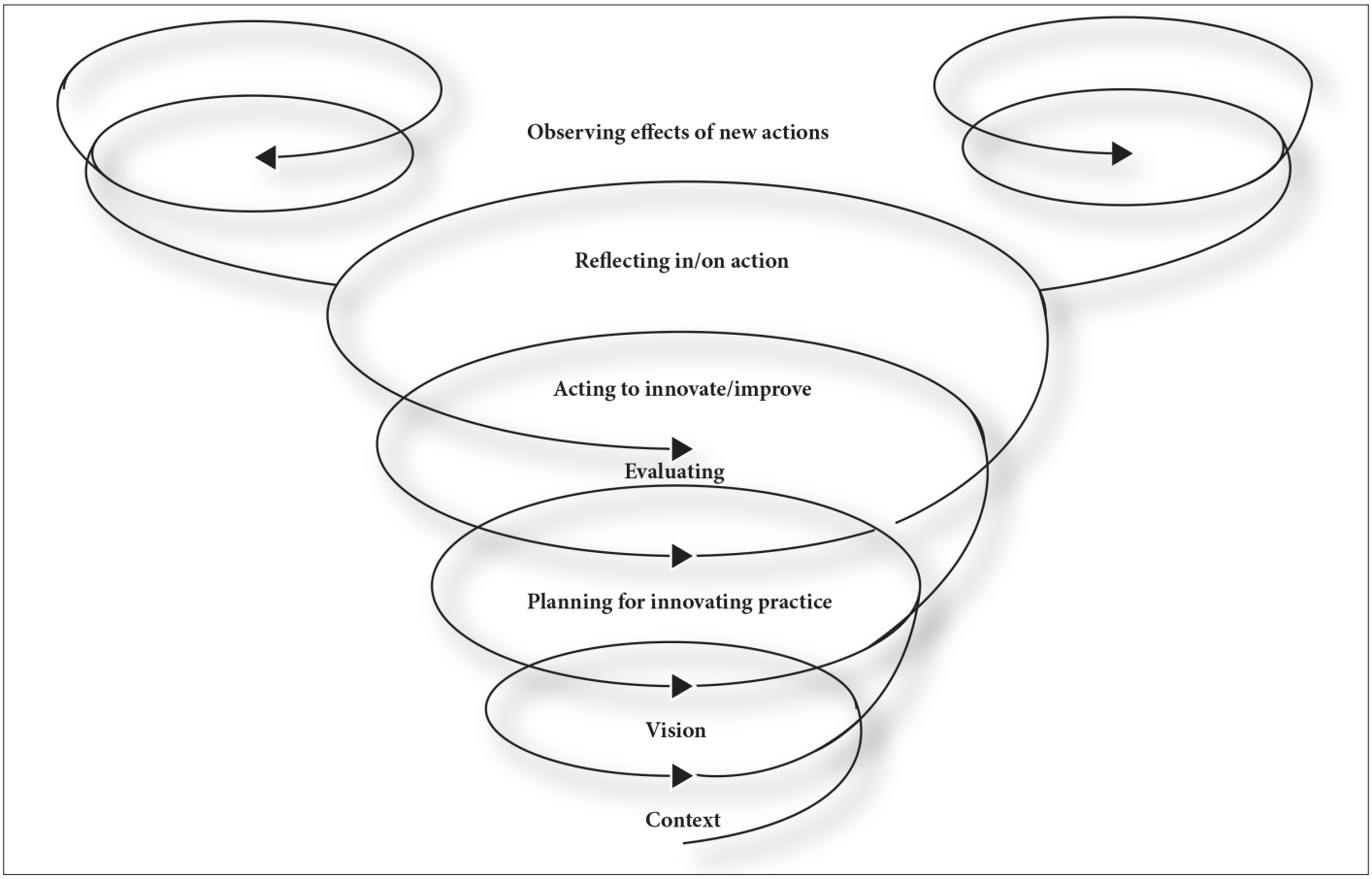

Fig. 1. Action research for innovation model.[18]

Facilitating self-directed learning for authentic learning is important, especially to ensure that learners set clear learning goals and opportunities to reflect on both what they have learned (outcomes) but also on how they have learned (process). This meta-learning about the process helps the learners to set new goals and new strategies to achieve these goals.

Action learning and action research

As the purpose of the involvement of all participants in the BCMP programme (learners and lecturers alike) is professionalism, the principles of action learning[15] are applied and form part of action research. In the BCMP curriculum learners and lecturers use action learning as a process that incorporates the same principles as self-directed learning.[16]

As a multidisciplinary team comprising health science and higher education specialists we aim to fully participate in educating professional clinical associates in a continuous fashion. We are enaged in various action research-related processes and activities, including workshops, meetings, peer mentoring and individual action research spirals.

The innovative idea is that we try to apply the assumptions of the learning theories that we have brought together under the umbrella of authentic learning and professionalism to do action research on all aspects of the BCMP curriculum. This includes *inter alia* curriculum development, facilitating learning, assessment, learner learning and professional development of all academic staff involved.

We consider our action research as constructivist learning (an epistemology stance that drives our research) and the entire intervention as forward looking and innovative. The complexity and uniqueness of our beliefs, experiences, values and virtues as participants in the BCMP curriculum are constructed as 'a living learning'[17] that serves as the theoretical framework for our professional learning.

The asset-based action research model that we follow is depicted in the visual representation in Fig. 1.

The steps followed in this sequential, cyclic model (depicted by the thick line of the spiral in the middle) demonstrate the processes that we follow to develop our curriculum. The de-routing spirals, each with their own cycles, are included to indicate the complexity of the action research process.

Conclusion

The BCMP programme creates a unique opportunity to systematically develop a curriculum through a facilitated learning paradigm that incorporates learning theories that are individually and collectively transformative, and to do this in a way that is action research informed. The potential of this curriculum extends beyond the formal education part of the programme into clinical associate practice, practice of the healthcare team and potentially medical and healthcare education more generally. It needs to match the transformative potential that the new profession of clinical associates promises for the healthcare system. It does not take away the many challenges that confront the BCMP programme and us as facilitators of learning, managers, learners and researchers. As individuals and professionals the success of this endeavour depends on our ability to participate deeply in the curriculum and practice.

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