Curriculum development and implementation in Papua New Guinea

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Abstract

The changing global environments in education, economics, politics, technology and ideological shifts that called for re-construction of social systems during the 1980s and 1990s had an impact on Papua New Guinea (PNG) as a nation (Fagerlind & Saha, 1989). In 1992, the Government of PNG reformed its national education system, and developed and implemented a new national curriculum in 2004 for human and societal development in elementary, primary and secondary sectors of education (Papua New Guinea Department of Education, 2003). This paper argues for prescriptive and interactive processes of curriculum development and implementation in school and classroom settings. This paper concludes with thought provoking questions on what the National standards-based curriculum is going to be like for the teachers and students in school and classroom settings.

Key words: curriculum, implementation, development, teaching, learning, outcomes-based curriculum, standards-based curriculum, interactive, prescriptive, process

Introduction

Papua New Guinea (PNG) adopted the Westminster system of government in 1975 from Australia, and is a member nation of the Commonwealth of Nations. The first European contact was with a Portuguese explorer, Jorge de Meneses, who arrived in 1526 (Sinclair, 2005). Western countries, including Britain, Germany and Australia, colonized PNG for nearly a century from 1884 to1974. PNG achieved Independence from Australia in 1975 (Rannells & Matatier, 2005; Sinclair, 2005). Today the PNG indigenous people speak more than 800 different local languages, each embedded within unique culture, traditions, initiations, customs, values and belief systems (Kulwaum, 1999; Rannells & Matatier, 2005). English is the official language of education and business, apart from the Motu and Tok Pidgin languages that are also being used in PNG (Rannells & Matatier, 2005).

PNG has both traditional and western systems of education. Traditional education in PNG is for survival and is underpinned by belief systems, rituals and initiations of the indigenous people (Matane, 1986), while the Western education system in PNG was introduced in the late 1800s by the early Christian missionaries and different colonial governments (Britain, Germany and Australia). The curriculum from Australia was used in the pre-tertiary sector from the 1940s until the mid 1980s. Teaching and learning experiences that the

students engaged in from the 1980s and 1990s were still influenced by the colonial educational policies developed during the colonial periods. The curriculum content promoted knowledge development without many practical-oriented learning experiences for the students to engage in to develop their skills and talents (Papua New Guinea Department of Education, 1991). The curriculum portrayed an objectivist approach to teaching and learning (McGee & Taylor, 2008). An objectives model curriculum follows a sequential cycle, from objective to content through to the learning experiences or activities and to the evaluation stage. The teaching and learning in primary schools, high schools and national high schools were driven by the need for students to pass the examinations, with the aim to select students to the next levels of education and possible employment (Matane, 1986).

The current status of PNG national curriculum

In 1992, the government of PNG reformed its national education system with an aim of creating a better social system. The Department of Education reformed the curriculum (Papua New Guinea Department of Education, 2002), based on the Matane Report, entitled 'A Philosophy of Education' (Papua New Guinea Department of Education, 2003, p. 4). Matane (1986) reported that the goal of the traditional curriculum in PNG was survival, while the missionary introduced curriculum was for eternal life, and the objective-based curriculum from Australian used in the colonial times was for economic development. Matane proposed that the above curriculum goals be integrated into a single curriculum goal that should develop people to fit well into the PNG society by utilising the resources and the opportunities available to them in a sustainable way in order to become productive members of the society.

On the basis of this argument or proposal, the National Education Department, in 2004, developed a new national curriculum for its elementary, primary and secondary education sectors (Papua New Guinea Department of Education, 2003). The new curriculum was an outcomes-based curriculum, which has been influenced by the United States of America's (USA) outcomes-based education model based on Spady's (1993) ideology. It is centred on the goal of Integral Human Development (IHD) (Papua New Guinea Department of Education, 2003). Other goals to support and achieve the central goal of IHD are:

- equality and participation
- national sovereignty and self-reliance
- natural resources and environment
- and Papua New Guinean ways.

(Matane, 1986; Papua New Guinea Department of Education, 2003).

The national outcomes-based curriculum goals above are adopted from the PNG National Constitution (Government of Papua New Guinea, 1975; Matane, 1986), and are defined as the key national curriculum goals. The curriculum promotes educational experiences based on student-centred learning in real life situations and includes knowledge, skills, attitudes and values designed to

empower students to be productive members of society at the completion of formal education (Papua New Guinea Department of Education, 2003).

Goals of PNG national curriculum

The PNG national curriculum has two goals that guide teaching and learning. The first goal, entitled 'integral human development,' which prescribes the empowerment of every student's 'cognitive, emotional, spiritual, physical, moral, cultural and social' development (Papua New Guinea Department of Education, 2003, p. 27). The PNG national outcomes-based curriculum provides direction for the development of appropriate cultural and traditional values to be integrated into the micro-curriculum in school and classroom situations for students to experience (Papua New Guinea Department of Education, 2003). Additionally, the PNG national curriculum places stronger emphasis on teachers to plan and deliver these values in the form of knowledge, skills, attitudes and values to achieve quality student learning in PNG contexts. This emphasis points to teachers as key players in making the curriculum goals become reality by crafting and implementing varied meaningful learning experiences for students (Papua New Guinea Department of Education, 2003).

The second goal of the PNG national curriculum is called 'our ways of life.' This goal seeks to capture the PNG indigenous knowledge in teaching and learning, by redeveloping, retaining, reviving and expanding the appropriate indigenous knowledge, skills, attitudes and values that are believed to have been alienated by Western ideas and influences (Matane, 1986; Papua New Guinea Department of Education, 2002). The indigenous knowledge of PNG refers to such things as: the rich 800 plus local languages; the cultural practices, rituals, initiations, and belief systems of indigenous people; different organic ways of farming; family raising practices; art making; dance and drama; food catering, hunting; fishing and building, to name a few.

Curriculum development models

Theories underpinning curriculum development have had a long history. Many different curriculum models had been developed and implemented between the 1940s and early 1990s that laid the foundation for major curriculum reforms that occurred between the 1990s and 2000s. Tyler (1949) was considered the father of the first curriculum model, as his curriculum model widely influenced both the macro-curriculum development (the national level), and micro-curriculum development in schools, teacher training institutions, universities and other training providing organisations globally. Tyler's model has been called 'rationale/objective' (Kelly, 2004; McKernan, 2008; Parkay & Hass, 2000; Print, 1993; Queen, 1999; Reis, 1999) and 'linear' (Walker, 2003) because it involves the formulating of objectives, goals or aims for student achievement. The content is developed from the objective/goal/aim, and the learning experiences and assessments are then designed from the content. The evaluation is carried out after the implementation of the content to see whether or not the objectives have been achieved (Kelly, 2004; McGee, 1997; Print, 1993; Taylor & Richards, 1979; Tyler, 1949; Wardekker, 2004). This process of developing

the curriculum is organised in a systematic way or order (Kelly, 2004; Walker, 2003), where there is a close relationship with strong flow-on links between the objective, content, learning experiences and evaluation stages (George, 2009; Walker, 2003).

From Tyler's (1949) linear/objective curriculum model, many other curriculum models have been proposed by curriculum theorists. In 1969, Hilda Taba proposed a curriculum model which was very similar to Tyler's linear model (McGee, 1997; Print, 1993) but different in that she claimed the 'situational needs' should be identified or diagnosed first. Situational analysis refers to worthwhile knowledge and skills the learners (students) should learn, the students' contexts (interests, abilities and needs), and the contexts or environments where teaching and learning could be undertaken. It is from these situational needs that the objectives are formulated, followed by the content, teaching and learning experiences and evaluation stages (McGee, 1997; Print, 1993). Nicholls and Nicholls (1978) and Wheeler (1967) designed similar curriculum models based on logical sequencing, where the situational needs are diagnosed or identified, as in the Hilda Taba Model, and then the objective is designed, followed by content, teaching and learning experiences, and on to the evaluation phase. From evaluation, the situational needs again are diagnosed, and the curriculum process continues (Hunkins & Hammill, 1994; McGee, 1997; Print, 1993). Nicholls and Nicholls (1978) and Wheeler's (1967) models of curriculum development involve an iterative process, while Taba's model is prescriptive.

Walker (1971) was another curriculum theorist, whose curriculum model was called 'naturalistic' (McCutcheon, 1995) and 'interactional' (McGee, 1997; Print, 1993). Naturalistic means the different phases of the curriculum should occur as outlined or expected, while interactional is the process where the different phases of the curriculum could interact to influence each other. The interactional or naturalistic model of curriculum development has three phases: curriculum platform, deliberation, and curriculum design (McCutcheon, 1995; McGee, 1997; Walker, 1971). The curriculum platform phase encompasses underpinning theories, beliefs, values, concepts, view points, aims and objectives, while the deliberation phase is where the teachers argue about, refute, accept, change and adapt ideas in school and classroom contexts (McCutcheon, 1995; McGee, 1997; Walker, 1971, 1990). In other words, the curriculum platform is where the objective is designed, while deliberation concerns the development of content for the students to experience. The design phase of curriculum relates to the actual implementation and assessment of the curriculum.

The accounts of curriculum development processes above clearly indicate that the Tyler (1949) model of curriculum commences with the objective phase and ends with the evaluation phase, while Taba's model of curriculum begins with the situational analysis phase and ends with the evaluation phase. So, Taba's model of curriculum is an extension of Tyler's model. In Nicholls' and Nicholls' (1978), and Wheeler's (1967) models, the curriculum development commences with the situational analysis phase but does not indicate an end in the evaluation

phase. The results of evaluation are used again to develop the curriculum, which is an iterative, cyclic process. Walker's model of curriculum commences with the objective phase and ends with evaluation. However, each phase of the curriculum may interact with another. As a result of the curriculum development processes above, the teachers often transmit the curriculum content to the students, while students passively listen and learn by absorbing and memorising, and perform summative learning activities (tests and examinations) to measure overall performance (McGee, 1997; McGee & Taylor, 2008; Muijs & Reynolds, 2011). The different models of curriculum development discussed above were collated and incorporated by Print (1993) into a model for curriculum development, as shown in Figure 3 below.

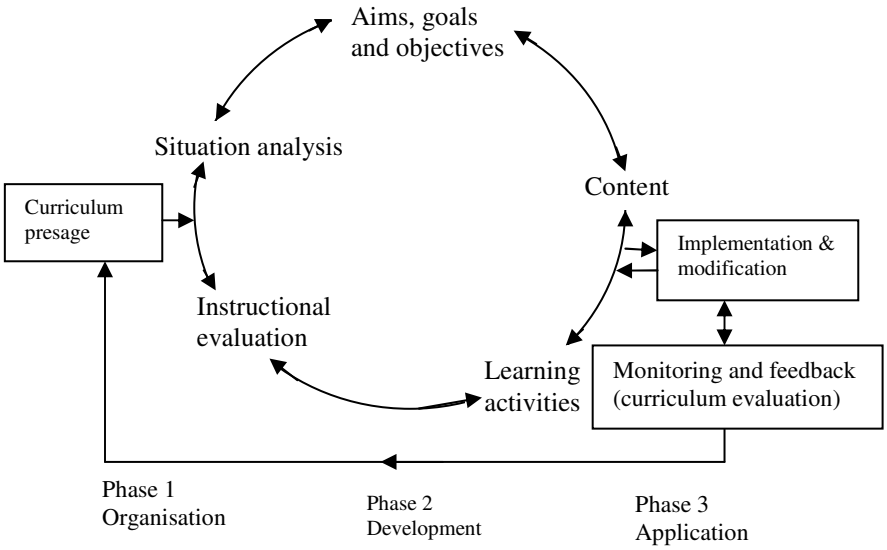

Figure 1: Model of curriculum development (Print, 1993, p. 84)

Figure 1 shows three phases of curriculum development: phase 1, organisation; phase 2, development; and phase 3, application. In phase 1, teams or committees are formed based on their abilities, qualifications, experiences and competencies to develop the curriculum. This phase is illustrated by the rectangle on the left labelled curriculum presage. Presage means to indicate a future occurrence. In phase 2, the actual curriculum development is done, as represented by circular structure and involves an iterative process. At the application phase, the actual curriculum content is implemented in school and classroom contexts. Teachers make modifications to the content to suit students' abilities, needs, and aspirations, as illustrated by a rectangle at the top right. The bottom rectangle on the right shows the evaluation of the implemented curriculum. The team in the organizational phase monitors and evaluates how teachers implemented the curriculum and student learning. Teachers and students provide feedback and based on feedback, the team revisits the curriculum to revise and/or change it.

In the 1990s, a new transformational outcomes-based curriculum model was introduced, which is an extension of the different curriculum models, as summarised by Print (1993). The new transformational outcomes-based curriculum model was adopted in Australia, New Zealand, South Africa, Scotland, Canada and Papua New Guinea (Fullan, 1999; Papua New Guinea Department of Education, 2003; Spady, 1993). 'Transformational' refers to the process of changing or altering current practices to adapt to new ways of teaching and learning, assessing student learning and organising learning environments (Killen, 2003; Spady, 1993; Walker, 2003).

In such a curriculum, the students perform a variety of learning activities to construct their own learning 'in settings, real situations, relating more directly to life' (Spady, 1993:10). This approach of curriculum development is called 'inside out' (George, 2009; Spady, 1993), and it is an interactive process (Spady, 1993; Spady & Marshall, 1991). According to George (2009,:161), the 'inside out' description refers to the argument that learning 'outcomes should always be central, as the starting point for designing and understanding the design of learning', where the curriculum content, pedagogies and student learning activities are developed from the learning outcomes. The evaluation and reporting systems can be used to measure whether or not the learning outcomes have been achieved by students.

According to Spady (1993:16), curriculum content and structure should link with a variety of formative and summative assessments, such as tests, assignments, journal writing, diary keeping, and oral presentations. In this Spady model, students' assessment reporting systems are criterion-referenced rather than norm-referenced (George, 2009; Papua New Guinea Department of Education, 2003; Spady, 1993). Criterion-referencing pertains to teachers reporting on an individual student's performance and his/her future learning against the learning outcomes using a set of guidelines or criteria. Student achievement is not compared and ranked to other students. Further, the teachers are required to use a variety of teaching and learning strategies in this model to promote quality student learning in school and classroom contexts to achieve the outcomes (George, 2009; Papua New Guinea Department of Education, 2003), rather than simply transmit information. The implementation of a transformational outcomes-based curriculum is an ongoing process to achieve student quality learning in school and classroom contexts (Spady, 1993).

Print's model of curriculum was collated from other curriculum models and clearly indicates an iterative process of curriculum development. In Spady's transformational outcomes-based curriculum model, the other phases of content, teaching and learning pedagogies, assessment and evaluation are developed from the learning outcomes. Each phase of the curriculum development interacts to influence the other. The differences in these two models of curriculum development are that Print's model follows prescriptive processes, while Spady's model involves an interactive process. So the 'prescriptive' and 'interactive' are two processes of curriculum implementation in school and classroom settings. Curriculum implementation has been defined as a 'process of putting into practice an idea, program, or set of activities and structures new

to people attempting or expected to change' (Fullan, 2007, p. 84). This definition means that curriculum implementation is related to how teachers interact with the national curriculum and develop it into their teaching programmes and deliver it to students in school and classroom settings (Deng, 2007; Queen, 1999).

Prescriptive process

The descriptor 'prescriptive' refers to the exact rules, guidelines and directions set out which are carried out in order to perform an activity to achieve something. In curriculum implementation, the teachers actually follow what has been written in the curriculum, and in turn students follow the exact guidelines and directions set for them by their teachers. This pedagogical approach appears to 'condition' students' behaviour where learning is organised through 'stimulus-response' association (Pavlov, 1960; 1963; Skinner, 1992). Teachers appeared to frame their thinking and thought process to control the students' behaviour through stimulus-response association in the delivery of their programmes. This stimulus-response association of learning is illustrated with a triangular diagram as shown in Figure 1 below.

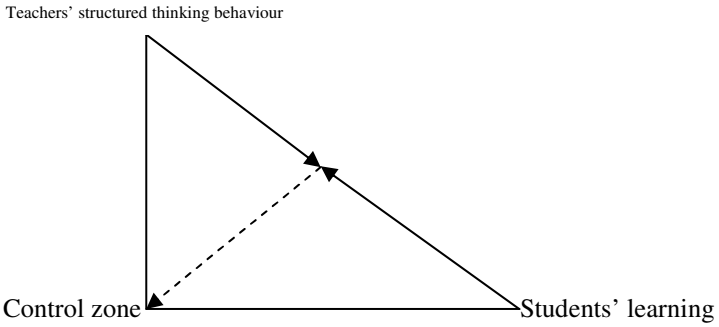

Figure 2: Teachers' structured thinki

The stimulus is the teachers' structured teaching behaviour and a response is students' behaviour. The middle point, within which the teachers' structured teaching behaviour and the students' learning behaviour appeared to meet could be viewed as a 'control zone'. This controlled zone is where the students would appear to demonmstrate their learning behaviour to learn.

Interactive process

The word 'interactive' means the action of several interrelated factors that influence the production of success or failure. In curriculum implementation the teachers develop a 'participatory relationship' with the curriculum (Remilard, 2005) because they interacted with the curriculum. Figure 3 illustrates how teachers interact and develop participatory relationship with the curriculum content to design their teaching programmes.

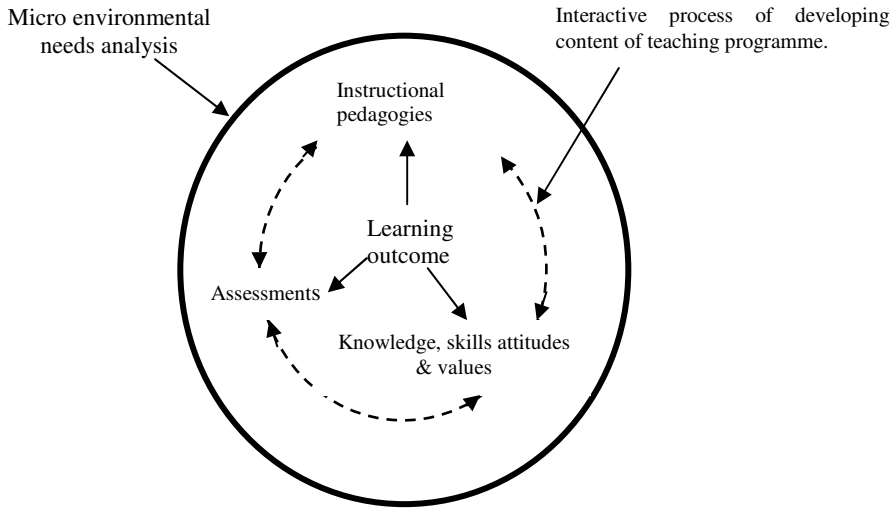

Figure 3: An interactive process of developing teaching programs

As shown by the outer circle, the teachers interact with the micro-environments (classroom and school), and diagnose the needs, and integrate with the curriculum. Teachers employ an interactive process to construct the content of their teaching programmes as shown by inner dotted line with bidirectional arrows. Thus, the manner in which the teachers interact with the curriculum can be described as the 'enactment,' 'fidelity' or 'mutual adaption' approaches (Snyder, Bolin, Zumwalt, & Fullan, 1995). An enactment approach refers to the actual interactions the teacher and students undertake to experience when they use the curriculum content in school and classroom situations (Remilard, 2005; Snyder et al., 1995; Walker, 2003), while mutual adaption and fidelity approaches are concerned with the teachers' interactions with the macro-curriculum content (Snyder et al., 1995). In particular, the mutual adaption approach describes a process where the teacher alters or modifies the content of the macro-curriculum to suit the students' learning needs in school and classroom situations (Fullan, 1977), while the fidelity approach involves the implementation in school and classroom contexts of the curriculum as it stands without change being made (Carroll et al., 2007; Fullan, 1977; O'Donnell, 2008).

Conclusion

The PNG Department of Education is now embarking on a reform to introduce a standards–based curriculum teacher education, elementary, primary and secondary sectors of education, which is an evolution of the outcomes-based curriculum introduced in 2004. Thus the following questions are thought provoking in relation to the proposed standards-based curriculum.

1. What countries are using a standards-based curriculum at system level and what paradigm informs their practices?
2. How will standards for learning outcomes be set and measured?
3. How will teaching and learning strategies change to adapt to a standards based approach?
4. To what extent will prescriptive and interactive processes be used to educate teachers and develop and implement a standards-based curriculum?
5. What is the nature of the vertical and horizontal dimensions of the proposed standards-based curriculum for elementary, primary and secondary sectors of education in PNG?

References

Caroll, C., Patterson, M., Wood, S., Booth, A., Rick, J., & Balain, S. (2007). A conceptual framework for implementation fidelity. *Implementation Science*. Retrieved from http://www.implementationscience.com/content/2/1/40

Deng, Z. (2007). Transforming the subject matter: Examining the intellectual roots of pedagogical content knowledge. *Curriculum Inquiry, 37*(3), 279-295.

Fagerlind, I., & Saha, L. J. (1989). *Education and national development. A comparative perspective* (2nd ed.). London, UK: Reed Educational and Professional Publishing.

Fullan, M. (1977). Research on curriculum and instruction implementation. *Review of Educational Research, 47*(1), 335-397.

Fullan, M. (2007). *The new meaning of educational change* (4th ed.). New York, NY: Teachers College Press.

George, J. W. (2009). Classical curriculum design. *Sage, 8*(2), 160-179.

Government of Papua New Guinea. (1975). *The constitution of the independent state of Papua New Guinea*. Port Moresby, Papua New Guinea: Papua New Guinea Government Printery.

Hunkins, F. P., & Hammill, P. A. (1994). Beyond Tyler and Taba: Reconceptualizing the curriculum process. *Peabody Journal of Education 69*(3), 4-18.

Kelly, A. V. (2004). *The curriculum: Theory and practice* (5th ed.). London, UK: Sage.

Killen, R. (2003). *Effective teaching strategies: Lessons from research and practice* (3rd ed.). Melbourne, NSW, Australia: Social Science Press.

Kulwaum, G. (1999). *Colonialism and development: In problems of devolution of PNG education*: Buai digital information project. Retrieved from htt://www.pngbuai.com/300socialscience/education/policy/development/kul-develop

Matane, P. (1986). *A philosophy of education for Papua New Guinea: Ministerial Committee Report*. Port Moresby, Papua New Guinea: Department of Education.

McCutcheon, G. (1995). *Developing the curriculum: Solo and group deliberation*. White Plains, NY: Longman.

McGee, C. (1997). *Teachers and curriculum decision-making*. Wellington, New Zealand: Dunmore Press.

McGee, J., & Taylor, M. (2008). Planning for effective teaching and learning. In C. McGee & D. Fraser (Eds.). *The professional practice of teaching* (3rd ed., pp. 116-135). Melbourne, Victoria, Australia: Cengage Learning.

McKernan, J. (2008). *Curriculum and imagination: Process theory, pedagogy and action research*. London, UK: Routledge.

Muijs, D., & Reynolds, D. (2011). *Effective teaching: Evidence and practice* (3rd ed.). London, UK: Sage.

Nicholls, A., & Nicholls, S. H. (1978). *Developing a curriculum: A practical guide*. London (2nd ed.). UK: George Allen & Unwin.

O'Donnell, C. L. (2008). Defining, conceptualizing, and measuring fidelity of implementation and its relationship to outcomes in K-12 curriculum intervention research. *Review of Educational Research, 78*(1), 33-84.

Papua New Guinea Department of Education. (2002). *The state of education in Papua New Guinea: education Reform facilitating and monitoring unit*. Port Moresby, Papua New Guinea: National Education Department.

Papua New Guinea Department of Education. (2003). *National curriculum statement for Papua New Guinea*. Port Moresby, Papua New Guinea: National Education Department.

Pavlov, I. P. (1960). The experimental results obtained with animals in their application to man. In G. V. Anrep (Ed.). *Conditioned reflexes. An investigation of the physiological activity of the cerebral cortex* (pp. 395-441). New York, NY: Dover Publications.

Pavlov, I. P. (1963). An analysis of some complex reflexes in the dog, and the relative strength and tensions of several centres. In W. H. Gantt, G. Volborth & W. B. Cannon (Eds.). *Lectures on conditioned reflexes: Twenty-five years of objective study of the higher nervous activity (behaviour) of animals* (pp. 255-274). New York, NY: International Publishers.

Perry, B. (2007). Australian teachers' views of effective mathematics teaching and learning. *Mathematics Education, 39*(5), 271-286.

Print, M. (1993). *Curriculum development and design* (2nd ed.). Sydney, NSW Australia: Allen & Unwin.

Queen, J. A. (1999). *Curriculum practice in the elementary and middle school*. Upper Saddle River, NJ: Merrill.

Rannells, J., & Matatier, E. (2005). *Papua New Guinea facts book: A one-volume encyclopedia of Papua New Guinea* (3rd ed.). Melbourne, Victoria, Australia: Oxford Press

Reis, W. A. (1999). *Curriculum as institution and practice: Essay in the deliberative tradition*. Mahwah, NJ: Erlbaum Associates.

Remilard, J. T. (2005). Examining key concepts in research on teachers' use of mathematics curricula. *Review of Educational Research, 75*(2), 211-246.

Sinclair, J. (2005). *Madang*. Madang, Port Moresby, Papua New Guinea: DWU Press.

Skinner, B. F. (1992). *Verbal behavior*. Cambridge, MA: Copley.

Snyder, J., Bolin, F., Zumwalt, K., & Fullan, M. (1995). Curriculum implementation. In W. F. Pinar, W. M. Reynolds, P. Slattery & P. M. Taubman (Eds.), *Understanding curriculum: An introduction to the study*

of historical and contemporary curricular discourses (pp. 699-704). New York, NY: Peter Lang.

Spady, W. (1993). *Outcome-Based Education*. Belconnen, NSW, Australia: Australian Curriculum Studies Association.

Spady, W., & Marshall, K. (1991). Beyond traditional outcomes-based education. *Educational Leadership, 49*(2), 67-72.

Taylor, P. H., & Richards, C. (1979). *An introduction to curriculum studies*. Windsor, UK: NFER Publishing Company.

Tyler, R. W. (1949). *Basic principles of curriculum and instruction*. Chicago, IL: University of Chicago.

Walker, D. F. (1971). A naturalistic model of curriculum development. *School Review, 80*(1), 51-65.

Walker, D. F. (1990). *Fundamentals of curriculum*. San Diego, CA: Harcourt Jovanovich.

Walker, D. F. (2003). *Fundamentals of curriculum: Passion and professionalism.* (2nd ed.). Mahwah, NJ: Lawrence Erlbaun Associates.

Wardekker, W. (2004). Curriculum as vision. In J. Terwel & D. Walker (Eds.), *Curriculum as a shaping force: Toward a principled approach in curriculum theory and practice* (pp. 1-15). New York, NY: Nova Science.

Wheeler, D. K. (1967). *Curriculum process*. London, UK: University of London.

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