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# An exploration in Health Education of an integrated theoretical basis for Sexuality Education pedagogies for young people

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## Abstract

In Health Education, much sexuality education appears to have little evidence of an acknowledged theoretical basis for its knowledge and skills' teaching and learning. The Health Education teacher can frequently be at a loss to decipher what theoretical principles could or should permeate sexuality education curricula, which may be both detracting and distracting from the educational process. This paper explores and analyses a suggested selection of sexuality education pedagogies integrating the theoretical framework of Anderson and Krathwohl and Gardner's Inter-personal Intelligence theories. In response to the earlier maturation of girls and boys, and the concomitant need for better and earlier sexuality education, pedagogies relevant for three age groups, elementary/primary school (7–9 years), middle school (10–12 years) and high school (13–15 years), are identified and analysed as appropriate for these students' cognitive abilities. The integration of these two educational theories has implications for Health Education practitioners, whereby this approach may be useful to assist sexuality educators in identifying and anchoring pedagogies in a more theoretical and structured approach. Providing theoretical starting points, and directions to achieve students' learning goals, may enhance the quality of Health teachers' conceptualizing and planning for implementing quality sexuality education knowledge and skills' teaching and learning.

## Introduction

In Health Education, sexuality education is important and essential for all young people [1–4]. To know about and understand sexuality, a significant part of oneself and others, is self-enhancing, empowering and confidence raising. The pubertal years are particularly important in gender, identity and values development. However, compared with other school subjects, such as English and Math, many schools give very little emphasis to Sexuality Education. Although sexuality is with us from conception to death, other school subjects, such as the Arts, may or may not be. In Australia, education about puberty, sexuality, relationships and reproductive health and safety is generally located in the Health and Physical Education (HPE) curriculum of the education authority of each state or territory. Ultimately, though, very little formal or classroom-based information is actually delivered to students during the compulsory school years [5–7]. In the United States, Weis [8] notes, '... there is not nearly enough sexuality education in schools, and that which does exist leaves much to be desired' (p. 621, see also [9]). In the United Kingdom, sexuality education is only part of a crowded curriculum of Personal, Social and Health Education and Citizenship [10].

However, knowledge/information on sex, puberty and sexuality can be introduced early and normalized so that it is available when students need it most and can build on their existing knowledge, that is, at the most opportune, relevant and effective

times (see [11]). This paper explores such an approach to contemporary Sexuality Education pedagogical practices by analysing theoretical principles that integrate the framework of learning and teaching by Anderson and Krathwohl [12] and Gardner's [13] Theory of Inter-personal Intelligence and then illustrating how this approach could be applied to Health Education.

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### The case for early integrated Sexuality Education

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It has been known for a number of decades now that boys and girls are maturing earlier, on average at ~12 years for girls having their first period and ~13 years for boys having their first wet dream [14, 15]. However, a significant proportion of children are now experiencing the onset of puberty and its changes, up to reproductive fertility, at much earlier ages [16]. In the United Kingdom, ~16% of girls aged 8 years are already menstruating [17], and this phenomenon has also been noted in Australian primary (elementary) schools [5, 18]. Such changing pubertal configurations and characteristics raise new challenges for teachers at all compulsory year levels. Similarly, the saturating sexualization of childhood that is evident in communication media and consumer culture, along with concerns or legal mandates for children's sexual safety and protection, have wide-ranging implications for teachers' educational responses to their students' sexuality education (see [19–21]).

Sexuality education is defined as an age-appropriate, accurate and realistic approach to teaching about sexuality, including sex, relationships, reproductive health and safety. It provides structured opportunities for children and adolescents to examine their values and attitudes, develop decision-making and communication skills and practise risk reduction and informed choice about their futures [22]. Adolescence is identified as consisting of three stages, namely early adolescence from 10 to 14 years; middle from 15 to 17 years, and late from 18 to 20 years [23]. School sexuality education curricula are often focussed on the middle and late

teenage years [24]. In light of the earlier maturing of girls and boys, however, the teen years have now become too late to be conceptualized as 'preparation' for puberty with its significant sexual changes and implications. Many children will have experienced sexual changes prior to age 10, more than half of all early adolescents will be sexually mature by the start of their teen years, and nearly all middle adolescent teenagers will be post-pubertal. Many of these students will have a girlfriend or boyfriend, and some may already be sexually active. In the United Kingdom, the median age of first sexual intercourse is 16 years [25]. While young people of this age who live in more developed countries and China will typically defer marriage until their late 20s [26], puberty for girls in less developed countries usually signals an end to schooling and the transition to marriage and childbearing [22].

Further, since beginner elementary/primary school students have been found to have the cognitive capacity to understand most content areas of sexuality education [73], see [22, 27, 28], it is then doubly inappropriate to 'begin' sexuality education in high schools, when it is 'too little, too late' ([29], p. 159). The focus for such programs should be in elementary/primary schools and middle schools, for students aged ~7 to 13 years, to provide timely, age-appropriate, better quality and effective sexuality education for all students as they need it during pre-puberty and the transformative pubertal years [26, 30, 31]. Research shows that sexual and reproductive health education is more efficacious if it is delivered before sexual activity begins [32].

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### Sexuality education in schools

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In the United States, schools may offer programs of abstinence-only sexuality education, even 'revirginization' ([9], p. 15), but these are ineffective compared with comprehensive, multi-focal and evidence-based programs in promoting pubertal well-being, risk protection and reproductive health for children and young adolescents [26, 33, 34]. In the United Kingdom, sex and relationships education is neither compulsory nor assessable, but it is

clearly linked to pastoral care and health services within schools under the education policy of *Every Child Matters* [25].

At this time in Australia, knowledge/information on sex, puberty and sexuality, although included in the compulsory HPE curriculum in each State or Territory, is delivered in a sporadic, 'ad hoc and somewhat discretionary' manner ([35], p. 212, see also [24]). For example, many students are not taught an accurate vocabulary for body parts and systems [18, 74]. In Queensland, each principal is responsible for instigating a sexuality education program after negotiations with the School Community Consultative Committee about timetabling, funding and content [18]. Relatively few elementary/primary teachers are confident of the level of workplace and parental support necessary to implement even simple, explicit and relevant pedagogies, let alone discussions on body image, sexual values or gender issues ([24], see [36, 37]). Schools may choose to employ external providers to deliver an annual lesson to the middle school Grades 4 to 8, for students aged about 8–13 years [18], but many children and adolescents are left to garner a 'playground education' ([25], p. 34) from sexual banter, boasting and bullying.

Further, a nationally coherent set of educational curricula is being developed in Australia, with those for English, Maths, Science and History to be implemented in schools in 2011 [38]. The second group of curricula, for Geography, the Arts and Languages Other Than English (LOTE), is due for implementation in 2012, but HPE is left until 2013. It is possible that negative body image will be specifically addressed as part of the healthy development and well-being of students. However, many of the general capabilities of students already nominated within the draft Australian Curriculum, such as self-management, thinking skills, ethical behaviour and social competence, have direct bearing on, and application to, education for puberty, sexuality, reproductive health and sexual safety. Social competence, surely another name for interpersonal intelligence, is partly defined as 'initiating and managing personal relationships; being self-aware and able to interpret

one's own and others' emotional states, needs and perspectives' ([38], pp. 12–3).

In the Australian State of Queensland, other programs within the HPE curriculum, such as Nutrition and Physical Activity, Road Safety, Mental Health, Drug Education and Skin Cancer Sun Safety, are very likely to be prioritized over the existing Human Relationships Education program [18, 24]. A comprehensive scan of sexuality education curricula and resources across all the states and territories of Australia found that Queensland schools lack curriculum guidance, learning expectations and effective implementation for sexuality education [7]. For example, the current program and the draft Sexual and Reproductive Health Education proposed to replace it fail to sufficiently incorporate terminology, issues or discussion of puberty, sexuality, reproductive health and sexual safety [24]. Student learning is not assessed at any level. Consequently, it is highly likely that most Queensland school students 'do not engage in this vital area of learning during the compulsory years of schooling' ([7], p. 7), that is, from the preparatory or kindergarten level up to Grade 12.

Characteristics of effective sex education and sexually transmitted infection (HIV) prevention programs by Kirby *et al.* [35, 39], for more and less developed countries, have been incorporated into United Nations' Educational, Scientific and Cultural Organisation's (UNESCO) new *International Technical Guidance on Sexuality Education (2009)* [22]. That document outlines the strategy of combating HIV/AIDS through programs of school-based knowledge/information on sex, puberty and sexuality, for children aged 5 years to late adolescents aged 18 and up to 24 years. The *Guidance* [22] includes scientific evidence, international legal requirements, key concepts and topics and comprehensive program structure useful for education systems of any and all nations. That UNESCO document is oriented towards a public health model, unlike the educationalist orientation of the *SIECUS Guidelines for Comprehensive Sexuality Education (2004)* [27] that address accurate biological, developmental and reproductive knowledge for each year of

elementary/primary, middle and high school for more developed countries. However, neither organization includes the theorization or pedagogies of puberty, sexuality and reproductive health/safety education. These omissions may compound Health teachers' difficulties in combining sound educational theory with engaging curriculum content and pedagogies. This paper explores such an approach.

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### **Sexuality Education's pedagogical, theoretical and knowledge basis**

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According to Ireson J. Mortimore P, and Hallam S (in [40]), pedagogy may be defined as, 'Any conscious activity designed by one person to bring about learning in another' (p. 213). An effective pedagogy is clear about its goals, theoretically sophisticated, imbued with high expectations, capable of providing motivation, technically competent and appropriate to its purpose [40]. Further, Rath JD (in [41]) shows that a conceptual pedagogical template may include the specific and applied characteristics of 'worthwhile activities' if they;

'... assign active rather than passive roles to students; if they involve students with real things; if they involve risk taking; if they require students to rewrite, polish and rehearse initial efforts; if they enable students to make informed choices in carrying out the activity; if they involve students in inquiry into ideas, application of intellectual processes or current problems; if they enable students to examine ideas, applications and current problems in a new setting; and if they share the planning and implementation of the plan' (p. 182).

This definition highlights the importance of having an underlying theoretical basis for pedagogy. A sound theoretical approach can provide necessary and specific pedagogical focus on objectives, content, teaching, learning and effective outcomes. Many quality school education curricula, such as in Social Studies, are conceptualized with substan-

tial theoretical bases; however, many sexuality education programs do not appear to have specifically articulated theoretical bases (see [10, 27, 31, 42, 43]). Currently, there are a number of theoretical frames of reference for sexual behaviour, for example, the Information, Motivational and Behavioural (IMB) skills Model, the theory of planned behaviour, the health belief model, the protection motivation model and the ecological model (see [44]). There are also many sociological and evolutionary frameworks for sexual, gender and power relations (see [21, 37, 45]). However, this paper is concerned with 'knowledge/information' on sex, puberty and sexuality, and its integrated pedagogical theorization in the early school years.

This research provides an exploration and application of the theoretical framework of Anderson and Krathwohl and Gardner's Inter-personal theory of Multiple Intelligences to some exemplars integrating Sexuality Education knowledge and understandings into the Health curriculum, or HPE as it is called in Australia. While the matrix by Anderson and Krathwohl and Gardner has been successfully used across the curriculum in two Australian schools (see [46]), it has not yet been applied to Inter-personal sexual knowledge and pedagogies in HPE (see [47]). Gardner's Multiple Intelligences theory has benefited schools, students and pedagogical practices in the United States (see [48]). The theoretical framework of Anderson and Krathwohl has recently been used to analyse primary school teachers' conceptualizations of sexuality education [5]; student-teachers' intentions to teach knowledge/information on sex, puberty and sexuality [49]; international middle school students' 'lack' of knowledge about sex, puberty and sexuality as evidenced by their online questions [50] and student-teachers' pedagogies for child sexual abuse protection [74].

Knowledge is a very important part of sexuality education (see [28, 31, 51]), particularly in light of the internal and invisible nature of many male and female sexual processes, such as such as the growth and development of ova, conception and the genetic determination of the sex of a baby [14, 52, 53]. However, '... current sexual health

education provision is not providing young people with adequate *knowledge* regarding sexual health and contraception' ([54], p. 151, italics added) or even about basic anatomy and body functions. For example, Goldman [18] found that some Australian primary school-age girls, 'and a surprising number of [parents and] female adults' (p. 23), do not even know that they have three openings between their legs rather than just two.

Blake [10] argues that in order to address a broad aim of Sex and Relationships Education (SRE) in the United Kingdom, programs supporting students' interpersonal relationships through lesson planning 'must help pupils to ... gain *information* about sex, sexuality, sexual health and relationships including *information* about contraception, sexually transmitted infections and HIV' (p. 22, italics added), that is, sexual knowledge. In a study of the salience and utility of school sexuality education for young men, Buston and Wight [55] found that '... for most young men, school sex education appeared to be the *only substantive source of information* they had received on sexual matters' (p. 135, italics added). Boys and girls describe '... how worrying growing up can be if you don't have enough information' ([10], p. 61). Similarly, Halstead and Reiss [30] argue that one of the distinct roles of the school in values education in sexuality is to '... fill in gaps in children's knowledge and understanding' (p. 4).

The importance of knowledge for middle school students, who are almost certain to be pubertal, has been identified as an important focus for productive pedagogies [23]. It has been observed by the author in primary, middle and high schools in Australia, United Kingdom, United States, Canada and in other countries such as Sweden, that pedagogies using class discussion or role-play appear to be far less effective when students have lower levels of knowledge of a topic compared with those with higher levels. Knowledge is accepted as the basis of much contemporary education, as it is in Queensland's HPE Syllabus [56], and knowledge is identified in many curricula as the starting point for planning and objectives, such as in Queensland's Studies of Society and Environment Syllabus [57]. Further, the centrality of sexual

'knowledge/information' is recognized in a variety of significant global texts, not only of UNESCO [22] and SIECUS [27] as detailed above but in policies and recommendations for reproductive health provision and sex, puberty and sexuality education.

Such knowledge/information is acknowledged by authorities such as the World Health Organization, the International Conference on Population and Development (ICPD), the Joint United Nations Programme on HIV/AIDS (UNAIDS), the Committee on the Rights of the Child (UNCRC) (see [58]), major Health and Medical Research institutions such as Australia's National Health and Medical Research Council (NHMRC), the Australian (federal) Senate and Australian State and Territory Departments of Health and of Education [18, 19]. Further, the Council of Australian Governments has reoriented the nation's child protection systems to a public health model promoting such knowledge and its education as a 'universal support' ([59], p. 7, see also [19]).

The UNESCO *Guidance* [22] advocates sexuality education ideally as a separate and continuous school subject, which ensures 'that competing priorities do not prevent it from being taught at all' but recognizes that 'it may be more practical to build upon and improve what teachers are already teaching, and look to integrate it within existing subjects such as social studies, science/biology, health or civics' (pp. 27–8). That document also advocates the integration of sexuality education with existing subjects, and therefore supports the cross-curricular theorizing, planning and pedagogies that are discussed in this paper (see [47, 74]).

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### **Cross-curricula approaches integrating the theoretical framework of Anderson and Krathwohl and Gardner's Interpersonal Intelligence theory with Sexuality Education**

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Cross-curricula or interdisciplinary approaches to curriculum design may be defined as those that 'transcend subject boundaries' ([41], p. 78). Here, it is sexuality education integrated with interpersonal cognitive, communication and relationship

development across all health (HPE) curricula. Such a cross-curricula approach has ‘less emphasis on the discrete boundaries and more emphasis on integrated forms of knowledge’ (p. 78), making the curriculum more relevant and meaningful, the teaching/learning process more child-centred and the content potentially more accessible and efficacious.

So, instead of using the subject, such as Sexuality Education, only within its boundaries, which may be HPE or Science, the teacher might design a program that focuses on a series of issues or themes requiring students to use a broader range of disciplines and skills, such as English, Information and Communication Technologies (ICT) and the Arts ([47], see [41]). Further, many syllabuses for Grades 1 to 10 include cross-curricula approaches as priorities. For example, Queensland’s Guidelines Sourcebook for teachers identifies ‘Planning for multiple learning outcomes’ and recommends ‘Using different contexts in which to apply knowledge, practices and dispositions developed through engagement with other [Key Learning Area] outcomes’ [60].

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### **Theoretical framework of Anderson and Krathwohl for learning and teaching**

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Revision and extension of Bloom’s original 1965 taxonomy by Anderson and Krathwohl classifies six categories of cognitive behaviours and their associated learning activities into a hierarchical system of verbs, starting with the lowest and simply conceived Remember, through Understand, Apply, Analyze and Evaluate to the highest and more complex Create [12].

Anderson and Krathwohl then cross-reference these categories into a two-dimensional grid with four types of knowledge, namely the lowest, Factual, or basic elements of knowledge in a discipline; Conceptual, the interrelationships enabling the basic elements to function together; Procedural, the ‘how to’ methods, skills, techniques and criteria of knowledge; and the highest, Metacognitive, that is, knowledge of cognition in general and of self-cognition in particular (see Box 1).

The teacher is then able to use these cross-linked characteristics, as shown in the cells of Box 1, to align his/her educational objectives, educational activities and educational assessment by locating where in the cross tabulation they should sit together. By using this ‘tri-alignment’ of objectives, activities and assessment, teachers can perceive a clear theoretical plan underlying their teaching, including starting points, content and goals and the optimal route of students’ learning achievement. For example, teaching and learning would ideally progress from Cell 1A, at Remember crossed with Factual Knowledge, diagonally towards the higher and deeper thinking of Cell 6D, at Create crossed with Metacognitive Knowledge, thus improving the quality of students’ focus and outcomes [12].

This theoretical framework is applied here because it aligns with the deep thinking and pedagogical requirements of many Departments of Education, for example, the Productive Pedagogies recommended by the Queensland Department of Education and the Arts ([61], see also [23]). It is also used by many Australian universities, including Faculties of Education, for student-teachers, for its teaching and learning principles. In university classes, as a teacher-educator, I have noticed that many student-teachers respond well to this model, find it logical, and make it transferable to many subject areas and content. Combining the theoretical framework of Anderson and Krathwohl (2001) with one of Gardner’s (1993) Multiple Intelligences goes even further, providing a three-dimensional matrix in which to identify, anchor and coordinate teaching pedagogies.

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### **Gardner’s Multiple Intelligences**

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Gardner identifies eight domains of cognitive ability, each of which is specialized for acquiring knowledge and solving problems in different ways ([62], see also [63]). Most people are seen as having a diverse but unique complement of affinities and capabilities in each of these so-called intelligences, not just one of them. This approach is not meant to be deterministic for learning ability. Rather, its

**Box 1. An application in Health Education based on theoretical framework of Anderson and Krathwohl (2001)**

Knowledge Dimension	Cognitive Dimension					
	1. Remember	2. Understand	3. Apply	4. Analyse	5. Evaluate	6. Create
A. Factual Knowledge	<b>1A</b>					
B. Conceptual Knowledge		<b>2B</b>		<b>4B</b>	<b>5B</b>	<b>6B</b>
C. Procedural Knowledge			<b>3C</b>	<b>4C</b>	<b>5C</b>	<b>6C</b>
D. Metacognitive Knowledge				<b>4D</b>	<b>5D</b>	<b>6D</b>

Source: Anderson, L.W. & Krathwohl, D.R. (2001) *A Taxonomy for Learning, Teaching and Assessing*, New York; Addison, Wesley, Longman.

cultural contextuality and inter-domain fluidity encourages teachers to regard intellectual ability more broadly and to provide multiple opportunities for positive educational experiences with authentic learning outcomes (see [46, 48]). It may also be used to identify and enhance areas of weaker competence. Gardner’s eight domains are Logical-mathematical, Linguistic, Inter-personal, Visual-spatial, Intra-personal, Bodily-kinaesthetic, Musical-rhythmic and Naturalist [63, 64, 65].

For sexuality education to have the most wide-spread impact, it would seem beneficial for strategies tapping each of these intelligences to be integrated into any school program. However, it is beyond the scope of the current paper to explore every type of these intelligences, and this research focuses specifically on one of them, namely Gardner’s Inter-personal intelligence. For Gardner, people with high levels of interpersonal intelligence have a heightened ability to understand and be sensitive to others’ feelings, temperaments, desires and motivations. They empathize, communicate, negotiate and work cooperatively and effectively with other people. Such intuitive negotiators engage readily with people from diverse backgrounds, are able to respond and solve interpersonal problems appropriately and effectively and have significant influence and/or impact on other people in desirable ways.

Children normally develop a meta-representational theory of mind by their sixth birthday, whereby they understand that other people can hold

diverse beliefs, thoughts and intentions and are able to see the world from another’s perspective [45]. Children with a high level of this understanding may excel at cooperative play, group activities, team games and sports and group sharing. Such students learn best by working with others, engaging with knowledge and pedagogies, enjoying discussions and collaborative projects (see [65, 66]). Many later choose careers involving close, cooperative and communicative networking, such as teaching, psychology or international relations and diplomacy. This paper now addresses the integration of Gardner’s Inter-personal intelligence with the theoretical framework of Anderson and Krathwohl, in the structuring of sexuality education knowledge and pedagogies for Health curricula.

**Strengths of integrating the theories of Anderson and Krathwohl and Gardner**

The strength of integrating Gardner’s Inter-personal theory with the theoretical framework of Anderson and Krathwohl is based in its three-dimensional model of knowledge, cognition and the inter-personal, for teaching, learning, planning and assessing (see also [46]). The use of interpersonal understandings and the development of relationships and communication skills are fundamental to the acquisition and understanding of knowledge in all areas and, indeed, for the survival and evolution of human beings, as all

play is a learning experience. These cognitive processes, knowledge and skills are necessarily part of Sexuality Education, and of most school subjects, although they are rarely acknowledged as such.

Knowledge of the human body, understanding of interpersonal values, group dynamics and social relationships, and processes of investigation, evaluation and decision-making that are highly significant for Sexuality Education, and also for interpersonal cognitive development, have traditionally been regarded as intuitive concerns. Rather, people need effective and relevant sexuality education at every stage of their lifecycle [3, 67], and, in particular, children need preparation for the often-tumultuous time of puberty. Gardner's work in Inter-personal engagement, knowledge acquisition, intellectual connectivity and problem-solving may assist this lifelong learning process with an underlying theoretical basis for its pedagogies. Vialle *et al.* [68] show that Gardner's theory and principles have become widely accepted and incorporated into the curricula of schools in the United States and Australia, especially in kindergarten/preschool and elementary/primary schools 'where teachers are more concerned with the development of the whole child' (p. 123). Carrington [23] notes that the combination of Gardner's theory and theoretical framework of Anderson and Krathwohl offers '... a systematic and shared framework [which] provides teachers, administrators and students with a common vocabulary, and set of concepts with which to talk about assessment, learning and change' (p. 141).

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### **Integrating theoretical framework of Anderson and Krathwohl and Gardner's Inter-personal Intelligence in Sexuality Education**

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In integrating the theoretical framework of Anderson and Krathwohl and Gardner's Inter-personal Intelligence, Boxes 2, 3 and 4 provide a selection of sexuality education pedagogies appropriate for students aged 7–15 years. In each Box, beside each dot point, the first italicized word in each cell is the

verb appropriate to the six Cognitive Dimensions by Anderson and Krathwohl, as shown in Box 1 above. The second word, and sometimes a third word, identifies one or more of the four Knowledge dimensions identified in Box 1, that is, Factual, Conceptual, Procedural or Metacognitive Knowledge. It should be noted that when the six Cognitive Processes are crossed with those of the four Knowledge Dimensions, there are a total of 24 cells. But, when using all the suggested verbs of Anderson and Krathwohl, a total of 209 cells may be identified.

The sexuality education pedagogies identified in the following sections aim to achieve the specific and applied characteristics of Ireson *et al.*'s (in [40]) 'effective pedagogies' and Rath's (in [41]) 'worthwhile activities' and provide examples of appropriate practice anchored theoretically. The topic areas and key concepts follow the SIECUS *Guidelines* [27], which structure physiological knowledge and decision-making skills into a framework promoting sexual health 'as part of an overall comprehensive health education program' (p. 21, see [28]). It is oriented more towards developed nations than is the otherwise very similar UNESCO *Guidance* [22].

The following sections addressing Boxes 2, 3 and 4 constitute a selection of suggested ideation pedagogies in response to the literature on children's age-appropriate cognitive, social, sexual and educational developmental requirements (see [1]). Although the content may seem advanced for children aged 7–15 years, it is appropriate and relevant in light of well-established evidence documented over 30 years, showing that young people are capable of sexual thinking at much higher levels than educators and parents have previously expected of them [14, 21, 73] and also in light of earlier maturing and earlier adolescence [23].

Constructing productive pedagogies appropriate for particular age cohorts, as exemplified in the following Boxes 2, 3 and 4, stimulates and identifies change in students' Cognitive Processes and Knowledge Dimensions. This growth is shown in the progress from simpler learning of Remember crossed with Factual Knowledge to higher-order processes of Evaluate and Create crossed with the deeper learning of Procedural

## Box 2. Sexuality Education for primary school students aged 7–9 years using Gardner’s Inter-personal theory and the theoretical framework of Anderson and Krathwohl

### Create

- *Produce, Procedural* In groups, collate, show and discuss a complete diagram of the female sexual system.
- *Produce, Procedural* In groups, collate, show and discuss a complete diagram of the male sexual system.
- *Plan, Conceptual* In groups, organize these jumbled letters to form accurate sexual vocabulary words. Plan how these words would fit into a mind-map of pubertal issues.

### Evaluate

- *Determine, Procedural* In groups, resolve how a man and a woman can negotiate having safe sex, before they have it.
- *Judge, Procedural* In groups, empathize how it would feel to be a pregnant teenager whose baby’s father stays away from her.
- *Determine, Metacognitive* In groups, negotiate a list of five sexual topics that you agree all boys and girls should learn about.

### Analyze

- *Differentiate, Conceptual, Procedural* In groups, choose one vocabulary word of a part of the male or female sexual systems, and play charades for your class to guess what word it is.
- *Select, Procedural* In groups, identify what you do not understand about puberty and growing up. Give your list of things to your teacher to address.
- *Distinguish, Conceptual* In groups, using these jumbled-up diagrams, distinguish the parts of the female sexual system, and the parts of the male sexual system.

### Apply

- *Execute, Conceptual, Procedural* In groups, design and present a charade about a problem within a part or process in the male or female sexual system that the class has to solve.
- *Implement, Procedural, Metacognitive* Pretend to be a teacher teaching about one aspect of a sexual system. Write a scene, rehearse it and role-play the scene.
- *Use, Conceptual* In groups, discuss and illustrate what these diagram labels represent (e.g. uterus).

### Understand

- *Interpret, Conceptual* In groups, clarify and describe the structure of the male sexual system on this diagram.
- *Exemplify, Conceptual* In groups, specify and describe the structure of the female sexual system on this diagram.
- *Explain, Factual, Conceptual* Using a diagram explain to your group all the different parts of the female sexual system.

### Remember

- *Recall, Factual, Conceptual* Tell a partner four facts you know about puberty.
- *Identify, Factual* In groups of four people identify and describe four parts of the male sexual system.
- *Locate, Factual* In groups of four people locate four different parts of the female sexual system.

Source: Anderson LW, Krathwohl DR. *A Taxonomy for Learning, Teaching and Assessing*. New York, NY: Addison-Wesley & Longman, 2001.

and Metacognitive Knowledge (see [46]). Revision of activities for each of the age groups is also included, providing examples of good pedagogical practice (see [68]). As Buston and Wight [55] note, ‘Material needs to capture the interest of the pupils, and, in the hands of the teacher, present

them with the opportunities to become involved in the lesson’ (p. 299). Each of these pedagogies may well be followed by extension, reinforcing, testing or synthesizing activities. This paper does not include these due to word limitations. Each age group and its example Box will now be addressed.

### Box 3. Sexuality Education for lower middle school students aged 10–12 years using Gardner’s Inter-personal theory and the theoretical framework of Anderson and Krathwohl

#### Create

- *Hypothesize, Metacognitive* In groups, discuss and forecast how your life will progress until you are in your 80s. Were there any things in common or were you all different?
- *Design, Procedural, Conceptual* In groups, design a flow chart of human sexual organs with accurate names, inputs and outputs.
- *Hypothesize, Metacognitive* In groups, formulate how you will propose marriage to someone. What did you agree on? What did you disagree on?

#### Evaluate

- *Critique, Metacognitive* In groups, select one question about sexuality. Analyse it using De Bono’s Six Thinking Hats. Discuss your outcomes.
- *Check, Procedural* In groups, make five statements about sexuality. Each group takes a turn to ask the rest of the class to verify whether each statement is true or false.
- *Judge, Procedural, Metacognitive* In groups, determine and test the best way to teach young people about one aspect of sexuality. Rewrite, polish and rehearse your teaching example. Explain it to your class.

#### Analyze

- *Attribute, Procedural* In groups, conduct a survey of your class to find out what they want to learn about their puberty and growing up.
- *Differentiate, Procedural* In groups, identify what you do not understand about puberty and growing up. Give your list of things to your teacher to address.
- *Discuss, Metacognitive* In groups, brainstorm how you can explain puberty better to 11-year-old students who do not know much about it. Write a plan to implement this better explanation.

#### Apply

- *Implement, Metacognitive* Pretend to be a doctor advising a man about the different types of contraception using a diagram.
- *Implement, Metacognitive* Pretend to be a doctor advising a woman about the different types of contraception using a diagram.
- *Execute, Conceptual* Survey students in your class and compile a list of five questions about what they want to learn now about growing up.

#### Understand

- *Compare, Procedural* Discuss and conclude in your groups what it feels like to have a period.
- *Summarize, Procedural* Discuss and conclude in your groups what it feels like to have a wet dream.
- *Exemplify, Procedural* Outline to your group what a period is and how girls address it.

#### Remember

- *Recall, Factual, Conceptual* Tell a partner the names of five parts and five facts about the male sexual system.
- *Recall, Factual, Conceptual* Tell a partner the names of five parts and five facts about the female sexual system.
- *Identify, Conceptual* With your partner, identify and define five aspects of puberty in boys and five in girls.

Source: Anderson LW, Krathwohl DR. *A Taxonomy for Learning, Teaching and Assessing*. New York, NY: Addison-Wesley & Longman, 2001.

### Sexuality Education curricula for elementary/primary school students aged 7–9 years

Box 2 identifies appropriate, engaging and productive knowledge-based curriculum pedagogies

using the theoretical framework of Anderson and Krathwohl and Gardner’s Inter-personal theory ideation examples.

Box 2 identifies examples with at least one of the characteristics identified earlier by Raths (in [41]) as pedagogically ‘worthwhile’. For example, if

they assign active rather than passive roles to students, such as in Analyze:

*Differentiate, Conceptual, Procedural* In groups choose one vocabulary word of a part of the male or female sexual systems, and play charades for your class to guess what word it is.

Another worthwhile pedagogical characteristic is enabling students to share the planning and implementation of the plan, such as in Create:

*Produce, Conceptual, Metacognitive* In groups, organize these jumbled letters to form accurate sexual vocabulary words. Plan how these words would fit into a mind-map of pubertal issues.

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### **Sexuality Education curricula for lower middle school students aged 10–12 years**

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Box 3 identifies appropriate, engaging and productive knowledge-based curriculum pedagogies using the theoretical framework of Anderson and Krathwohl and Gardner's Inter-personal theory ideation examples.

Box 3 identifies examples with at least one of the characteristics identified earlier by Rath (in [41]) as pedagogically 'worthwhile'. For example, if they involve students with real things, such as in Analyze:

*Attribute, Procedural* In groups, conduct a survey of your class to find out what they want to learn about their puberty and growing up.

Another worthwhile pedagogical characteristic is if they involve students in the application of intellectual processes, such as in Evaluate:

*Critique, Metacognitive* In groups, select one question about sexuality. Analyze it using De Bono's Six Thinking Hats. Discuss your outcomes.

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### **Sexuality Education curricula for upper middle school students aged 13–15 years**

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Box 4 identifies appropriate, engaging and productive knowledge-based curriculum pedagogies using the theoretical framework of Anderson and Krathwohl and Gardner's Inter-personal theory ideation examples.

Box 4 identifies examples with at least one of the characteristics identified earlier by Rath (in [41]) as pedagogically 'worthwhile'. For example, if they require students to rewrite, polish and rehearse initial efforts, such as in Apply:

*Use, Procedural* Using role-play, create a scenario of an girlfriend and boyfriend discussing contraception. Rewrite, polish and rehearse your role-play.

Another worthwhile pedagogical characteristic is if they involve risk taking, such as in Understand;

*Interpreting, Procedural* To your group, interpret what sort of discussions a teenage mother has with the teenage father of her baby.

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### **Discussion**

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Boxes 2, 3 and 4, which align the theoretical framework of Anderson and Krathwohl and Gardner's Inter-personal Intelligence theory into a three-dimensional framework of knowledge, cognition and inter-personal, provide examples of how teachers can apply these integrated theories to structure their sexuality education planning and learning, teaching and assessing. As Tileston [69] says, 'The brain likes patterns; in fact it seeks patterns when it encounters new information. We can help our students learn and remember more efficiently by providing these patterns within our lessons' (p. 61). Some teachers like to identify the sub-parts of these theoretical structures in order to help students develop macro-cognitive skills and practices (see [46]). Teachers may also find

### Box 4. Sexuality Education for upper middle school students aged 13–15 years using Gardner’s Inter-personal theory and the theoretical framework of Anderson and Krathwohl

#### Create

- *Design, Procedural* Design a board game about any process that occurs in the human sexual system, e.g. ‘Sperm Journeys’, ‘Ovum Olympics’.
- *Generate, Conceptual* In groups, organize these jumbled pictures and labels of the sexual systems into a coherent pattern.
- *Hypothesize, Metacognitive* In groups, hypothesize (make an intelligent guess) about the values you want to live your life by. What did you agree on? What did you disagree on? Write a plan for implementing these values in your life.

#### Evaluate

- *Judge, Conceptual, Procedural* In groups, discuss all the different types of contraception, and make recommendations about three of them.
- *Critique, Procedural* In groups, negotiate which ten desirable characteristics in a relationship are important. Justify your choice.
- *Determine, Conceptual* In groups, discuss five different types of contraceptives. Write a PMI chart (Plus, Minus, Interesting) about them, and explain to your class.

#### Analyze

- *Attribute, Procedural* In groups, conduct a survey of your class to find out what they want to learn about sexuality.
- *Distinguish, Metacognitive* In groups, identify what you do not understand about sexuality. Give your list of things to your teacher to address.
- *Deconstruct, Metacognitive* In groups, brainstorm how you can explain sexuality better to 14-year-old students who do not know much about it.

#### Apply

- *Use, Conceptual* Demonstrate on this diagram of the male sexual system, how a wet dream occurs.
- *Implement, Factual* Show on this calendar the different parts and sequence of a female cycle.
- *Use, Procedural* Using role-play, create a scenario of a girlfriend and boyfriend discussing using contraception. Rewrite, polish and rehearse your role-play.

#### Understand

- *Describe, Procedural* Describe to your group the feelings of a teenage mother.
- *Describe, Procedural* Describe to your group the feelings of a teenage father.
- *Interpret, Procedural* To your group, interpret what sort of discussions a teenager mother has with the teenage father of her baby.

#### Remember

- *Identify, Conceptual* In pairs, tell your partner 10 facts about your sexual system and define those facts.
- *Recall, Factual* List with your partner as many parts as you can think of in the female sexual system. Spell them accurately.
- *Recall, Factual* List with your partner as many parts as you can think of in the male sexual system. Spell them accurately.

Source: Anderson LW, Krathwohl DR. *A Taxonomy for Learning, Teaching and Assessing*. New York, NY: Addison-Wesley & Longman, 2001.

it useful to teach upper elementary/primary, middle and high school students the theoretical structure of both the theoretical framework of Anderson and Krathwohl and Gardner’s Multiple Intelligences. This may help students identify and understand their own thinking processes, see the

pathways and possibilities, and progress in their metacognitive abilities [46]. Students can then aim for the higher thinking levels such as those shown in the Cells 4B, 5B and 6B, 4C, 5C and 6C and 4D, 5D and 6D in Box 1. That is, the Cognitive Processes of Analyze, Evaluate and

Create crossed with the Knowledge Dimensions of Conceptual, Procedural and Metacognitive Knowledge [12].

Since students learn in different ways, in different contexts and with different teachers, the developmental learning for each student across the cells in each age cohort example Box may well overlap in the theoretical bases, and in the characteristics of worthwhile activities. Further, the inclusion of metacognitive tasks or tasks that require students to ‘think about their thinking’ processes will depend on what metacognitive skills the teacher and his/her predecessors have developed in the students (see also [46]). As Vialle *et al.* [68] note:

... metacognitive expertise is the key to explaining why some people may be able to learn and remember more effectively than others. Teachers with knowledge of this concept will be in a position to encourage their students to develop the metacognitive skills they need to think, learn and remember more effectively. For students, the development of metacognitive expertise is important because it will enable them to operate successfully as independent learners. (p. 89).

The pedagogies in Boxes 2, 3 and 4 also aim to address the specific and applied characteristics identified for worthwhile activities by Rath (in [41]). Further, the pedagogies provide examples of the characteristics of effective pedagogy noted by Ireson *et al.* (in [40]), namely, clarity of goals, high expectations, motivation and activities that are technically competent, appropriate and theoretically sophisticated. Goals, high expectations and motivation may well be present when the student learns where his/her thinking is located in the cells of Anderson and Krathwohl, and is taught where s/he can progress to, that is, where goal-oriented, directional and personalized learning goals are provided for every individual student (see [46, 70]). In addition, the activities are designed to be relevant to contemporary youth values (see [30]) and a globalized or ‘glocal’ society [23], where

the global and the local cannot be separated [71], to prompt a genuine openness in understanding human sexuality and to present sexuality as ‘a positive and healthy aspect of life’ ([72], p. 127).

This three-dimensional model of curriculum and pedagogy may provide learning encounters facilitating engagement with ‘glocal’ values, social justice principles and environmental education. Further, such integration may facilitate examination of the contemporary and increasing impact ‘of Information and Communication Technologies (ICTs) of space-time compression ... [and of] the notion and actuality of cyberspace’ ([71], pp. 53–5). It may be seen that the intertextuality and hypertextuality of the Internet, and the multilinear relational activity in all virtual dimensions [71], gives an indication of contemporary changes in learning and teaching. It appears that the future will be interactive, encouraging greater integration between curricula and pedagogies and, as shown in this case, in the development of interpersonal cognition. The same integrative principle applies to each of Gardner’s Multiple Intelligences and to all Key Learning Area curricula.

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### Implications for Health practitioners

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In light of the apparent paucity of theoretical bases in sexuality education knowledge-based Health Education curricula, using the theoretical framework of Anderson and Krathwohl integrated with one of Gardner’s Multiple Intelligences, namely Inter-personal, as suggested here, may be useful to assist Health Educators to use underlying theoretical principles and practices in their Unit and Lesson planning, teaching and implementation.

Noble’s [46] study in two small elementary/primary (K-6) schools, using a version of this model for curriculum differentiation over 18 months, shows a synergistic effect from these integrated planning typologies. That is, the integration of the theoretical framework of Anderson and Krathwohl with one (or more) of Gardner’s Multiple Intelligences combines and exceeds the advantages and benefits of both. The use of both theoretical principles to support a matrix of

practical programming works to clarify, engage and accelerate meaningful learning and successful outcomes. Specifically, this combination consistently provides students with more, and novel, options for learning achievement, facilitating an awareness of their own learning and developing confidence as a precursor to intellectual risk-taking, while increasing peer respect, self-motivation and shared learning [46]. The integrated matrix also comprehensively broadens Health Educators' conceptualizations of their students' learning success and helps them to cognitively challenge all their students while simultaneously catering for a wide range of diverse abilities [46]. All but one of the teachers in Noble's study using this integrated approach observed positive, even 'amazing' effects in student outcomes and benefits to their own 'professional competence' ([46], pp. 202–6).

Such an improvement in clear, appropriate, confident, cooperative and knowledgeable learning, supported by Rath's 'worthwhile' activities (in [41]) and approached through 'effective ... motivating ... and theoretically sophisticated' pedagogies as required by Ireson *et al.* (in [40], p. 213), appears to be one approach to help provide theoretical support for Health Educators in Sexuality Education, as has occurred with other school subjects such as English, Math and Social Studies. By concentrating on educational objectives and activities, and by situating them in this three-dimensional structure, Health teachers may implement programs that are simultaneously more theoretically-based and more individually focussed, and are therefore more substantial, engaging and effective for students' learning success in sexuality education (see [46]). As noted previously, sexuality curricula should be integrated with other education programs, and this paper has provided an exploration, along with some examples, of the theoretical framework of Anderson and Krathwohl integrated with Gardner's Inter-personal Intelligences theory. Given the necessary support and time, sexual knowledge and its pedagogical theorization can be structured by Health Educators to meet contemporary school challenges of earlier student maturation, successful learning outcomes and values communication (see [11, 23]).

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## Conclusion

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Sexuality education is crucially important for all young people [1, 2, 22]. Similarly, it is vital that schools provide children with authentic and satisfying learning interactions with people and the environment. Interpersonal, communication and relationship cognitive development promotes participation, negotiation, cooperation, team and group ethos, reflection and responsibility, intellectual judgement, decision-making and leadership skills and productive learning opportunities. Our sexuality is with us from conception to death, as are relationships and interpersonal skills, yet the necessity for education and knowledge in these most human characteristics is still sadly under-emphasized in schools. The process of puberty is starting earlier than in previous generations, and children need accurate knowledge and realistic psychosocial preparation for it. School-based Sexuality Education is, then, highly relevant and universally applicable to all young people, particularly in light of a quote from Ireson *et al.* (in [40]) that, 'Good citizens need to develop critical and reflective awareness, to make informed choices and to take responsibility for their own decisions. This requires the acquisition of knowledge, understanding attitudes and competencies' (p. 214).

In order to enhance young peoples' sense of being competent citizens in a democratic society, able to make informed choices and take personal responsibility for those choices, it is essential to educate them much more effectively about their bodies, their relationships and their sexuality [73]. The suggested approach above may be one way for Health Educators to help students have access to effective, theoretically-founded, research-based, open and accurate school learning experiences, to enhance their personal understandings, interpersonal skills and self-confidence as competent citizens.

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## Conflict of interest statement

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None declared.

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