

**DEVELOPING A MODEL CURRICULUM  
IN SURGICAL TECHNOLOGY**

**By**

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## **/H1/ Introduction**

The lay person or individual not involved in education usually associates the word “curriculum” with a course, textbook, or syllabus. However, the professional educator views the word in a more worldly sense. The term curriculum is broad and refers to the whole learning experience of students. For example, it can include a formal plan, global objectives, and the methods of educational delivery. Primarily, surgical technology educators as curriculum developers should be concerned with the purpose of the curriculum design and clarify that purpose as an essential prerequisite to developing a quality program.

Therefore, curriculum is a comprehensive plan for learning. The plan is a vision and structure that can then be translated into learning experiences for the student. Curriculum development then progresses along a process that organizes the learning act based on the values of the community, school, and educator. The value preferences are an extremely important influence on curriculum development. Due to the decentralized nature of the American educational system, the role of curriculum developers in interpreting values that then affect the arrangement of learning experiences has the end result of what and how students learn.

Even though the question, “What is the purpose of schools?” remains largely unanswered, the process by which curriculum is developed is highly established. Standard terms are used to describe the deductive process of curriculum development such as analysis, design, implementation, and evaluation. But with time, this historical cycle of development will most likely change as curriculum planners are faced with an array of choices as to what schools can be.

The purpose of this report is to provide a brief synopsis of curriculum development to include definitions of curriculum planning, philosophy in curriculum development, instructional considerations, and terminology. The information is provided to the reader to form a basis in which to hone their skills as a curriculum planner. It is hoped that this information will also motivate the novice and skilled instructors to continue their personal research into improving their curriculum development skills.

### **/H1/ Definitions of Curriculum**

Curriculum development is a set of coordinated activities that follow a logical process. It begins by formulating clear goals and continues in an “if-then” manner until completion. Thus, curriculum development is a deductive process and the actions become more detailed that results in a final product.

Curriculum planning should begin with a series of questions that reveal the value preferences and the answers serves as the basis of planning efforts and program evaluation. The value preferences as revealed by the answers are referred to as the educational philosophies. Curriculum developers who bypass this stage and do not develop value preference clarification are already following a course of producing an incomplete educational product.

As evidenced by the above information, curriculum planning can be judged by its efficiency. The process of development is standard and has long been widely accepted by academia. Curriculum development activities are a combination of being both purposeful and process-oriented. The theme common in all curriculum development efforts is for the improvement of student learning. A program can't be designed until a curriculum planner knows the purpose of the program and the intended audience. The

process that contributes to improved learning is a cyclical model: analysis, design, implementation, and evaluation.

Hence, curriculum development is a process that is complex, but follows a simplified procedure. The definition of curriculum reflects the complexity and depends upon when the definition was written. For example, during the 1950's definitions will reflect a tendency of emphasizing aspects of curriculum that were planned, as opposed to the general learning experiences of the student. Wiles and Bondi (1993) "see the curriculum as a desired goal or set of values, which can be activated through a development process culminating in experiences for students. The degree to which those experiences are a true representation of the envisioned goal or goals is a direct function of the effectiveness of the curriculum development efforts" (p. 12).

Even though the definition of curriculum has changed due to social forces and the continuous query of what schools should accomplish, the process of curriculum development has remained relatively unchanged. The constant processes of analysis, design, implementation, and evaluation have contributed to the establishment of a process-oriented structure in curriculum planning. Consequently, curriculum planners have been able to apply this process to improve their own processes of setting goals, plan learning experiences, select program content, and assess outcomes of the school programs.

### **/H1/ Philosophy and Curriculum Planning**

The core of curriculum development is an educational philosophy that aids in answering the value-laden questions and making curricular choices. The philosophy is essential in order to give meaning to any curriculum development effort. When forming

an educational philosophy, curriculum planners are forced to consider their values as pertaining to education. In the 21<sup>st</sup> century, the decisions that affect the scope of curriculum will have an important impact on the structure and content of school programs. Therefore, curriculum planners must be aware of their own beliefs about education, learning, and teaching in order to make better decisions.

In the absence of an educational philosophy and the direction it provides a curriculum will include nearly everything, but be able to accomplish little. A philosophy that accurately reflects the beliefs and values of the curriculum developer can accomplish the following:

- Provide the intent and purpose of the existence of the program
- Define the roles of the persons directly associated with the program and school
- Clarify the objectives of the program
- Clarify the learning activities in the program
- Direct the selection of learning strategies and tactic to be used in the classroom

Even though it is time consuming, the time invested in exploring and establishing philosophical beliefs and attitudes are important before attempting to work with other curriculum planners, instructors, and administrators. The curriculum planner must assess their own attitudes to identify a value structure that can then be organized and communicated to others through the curriculum planning process. A major benefit of this exploration is that “areas of common ground among those responsible for educational leadership can be discovered. Common values that overlap individual beliefs form the

most fertile ground for curricular collaboration and development of successful projects and programs” (Wiles & Bondi, 1993, p. 40).

## **/H2/ Five Philosophies**

Many kinds of educational philosophies have been proposed. To provide a simple, yet broad spectrum of thought about what schools and programs should be and could be, the five categories developed by Wiles and Bondi (1993) will be presented: perennialism, idealism, realism, experimentalism, and existentialism. An educator whose dominant educational philosophy is idealism would create a surgical technology program that is much different from a perennialist. The learning environment for the students would be very unlike the other.

Before continuing, a short section concerning axiology, epistemology, and ontology requires discussion. The five philosophies are presented in a manner based on the principles of these three philosophical studies. The information provided is basic and the reader is referred to a comprehensive textbook of philosophy to gain detailed insight into the three areas of study.

The primary philosophies of life in general and pertaining to education have centered on three basic questions: What is the truth? What is goodness? What is reality? Obviously, a curriculum developer’s view and answers to these questions will be unique and different from anyone else. More importantly, the views will affect their unique approach to curriculum development.

Using philosophical terminology, the study of knowledge and truth is referred to as epistemology, the study of goodness is referred to as axiology, and reality is ontology. Curriculum developers pose questions of an epistemological nature to direct the attention

of program development toward the best methods of learning or seeking the truth.

Axiological questions are concerned with the source of values that are to be taught (Wiles & Bondi, 1993). Ontological questions center on the search of reality and therefore, the content of study. “Thus, the standard philosophic inquiries concerning goodness, truth, and reality are translated into questions concerning the source, medium, and form of learning in a school environment” (Wiles & Bondi, 1993, p. 41).

### **/H3/ Perennialism**

The most conservative and inflexible philosophical approach to education is the perennialist. This individual relies on the classical definitions of education and believes that it is a constant, unchanging institution. They believe that education should be based on structured study to prepare the student for life. Perennialist instructors interpret the information and the student is a passive learner. A last important view of the perennialist is that change in curriculum is unnecessary since truths are stable as revealed through study and reason is learned by teaching eternal truths.

### **/H3/ Idealism**

Idealism is a philosophy in which reality is a person’s own vision of the world. Truth is discovered in the uniformity of ideas. Goodness is utopia and individuals should constantly try to attain it.

Idealists prefer schools that teach subjects of the mind and the teacher should be a role model of ideal behavior. Idealists believe the functions of schools are to present historical wisdom and models of preferred behavior. Students are also passive learners as they receive and memorize the information provided by the instructor. From a

curriculum stand-point-of-view, changes are seen as unnecessary and disruptive to the orderly process of education.

### **/H3/ Realism**

Realism is self-explanatory; the world is seen as the here-and-now. The realist finds goodness in the set order of the physical world. Truth is based on observation.

Realists prefer a school that concentrates on subjects such as math and the sciences. Information based on fact is presented for the student to become proficient in knowing. The realist as an instructor would create a disciplined and orderly learning environment. Again, students are passive learners. However, curriculum development and change would be encouraged since it is a “natural evolution toward a perfection of order” (Wiles & Bondi, 1993, p. 43).

### **/H3/ Experimentalism**

Experimentalists are unlike the three philosophies discussed above. They accept and encourage change. They constantly seek new ways to improve society. Truth changes and what is believed is what is currently in place.

Experimentalists favor a school or program that emphasizes subjects based on life experiences and social subjects. Students learn through problem solving, and studies based on cause-and-effect. Instructors would be facilitators that aid the learners in questioning and discovering their world.

### **/H3/ Existentialism**

Existentialism is the most boundary-free philosophy. “Reality is a world of existing, truth subjectively chosen, and goodness a matter of freedom” (Wiles & Bondi, 1993, p. 44).



For existentialists, schools and subjects would most likely not exist. If they did, schools would serve the purpose of assisting students in learning about themselves. As well, subjects would include the arts, philosophy, and ethics. The student would be allowed to interpret the subject matter according to their view with the assistance of the instructor. Students most likely would be allowed to determine what they want to learn. Change in the classroom and curriculum would be a natural process, often unplanned.

### **/H1/ Tasks in the Curriculum Planning Process**

As previously mentioned, curriculum development should proceed in an organized manner using the deductive method of an if-then process. When an orderly set of tasks are used a quality curriculum will be developed as opposed to instructors that institute change on a haphazardly basis. A good process aids in (1) the analysis of purpose, (2) the arrangement of a program, (3) putting into action related learning events, and (4) the evaluation of the program.

The following model provides a visual for curriculum development:

Purpose ⇒ Goals ⇒ Objectives ⇒ Needs Focusing ⇒ Curriculum Alignment ⇒ Instruction

The first step to clarify the purpose of the curriculum. This step also involves developing a philosophy, and then progressing to the development of goals and objectives. After this framework for developing a program is established, “an assessment of need is conducted to sharpen the focus in terms of the target – the learner” (Wiles & Bondi, 1993, p. 77).

The last step involves sequencing the learning events and aligning them to achieve the best learning experience for the students. The goal of the curriculum developer in using the model is to accomplish an outcome that closely matches the intended purpose of the curriculum. Further details are provided in the following sections concerning the steps of curriculum planning.

## **/H2/ Purpose**

As mentioned in the above section, the clarification of purpose involves identifying a philosophy (refer to Five Philosophies). The philosophy serves as the basis for clarifying the values and beliefs about the purpose, goals, and objectives of a program. Only by developing a philosophy can curriculum planning progress.

A popular method of creating a philosophic statement is to have the individuals involved in the curriculum process develop their own belief statements. The statements will reflect the various beliefs about the purpose of education and values. The curriculum specialist must not only know their own values, but those of others involved with program development, such as the dean, preceptors, program clinical educators, and O.R. manager. The philosophic statement that is created will most likely show that the program exists to meet the needs and interests of students.

## **/H2/ Goals**

Goals are derived from the philosophical viewpoints of the school, department (in the case of surgical technology programs, the Allied Health Department), and community. The goals are statements pertaining to the outcomes of education. Goals, like the statement of philosophy, are a foundation of curriculum planning.

Goals will range from broad statements to specific. For example, the mission statement of a college, which usually serves as the philosophical statement, will be supported by the broad educational goals. The goals of a surgical technology program will be more specific, but should still relate to the mission statement and goals of the college.

## /H2/ Objectives

Objectives also guide the long-range curriculum planning process. They are the operational statements that describe the desired outcomes of the program. The objectives are derived from the goal statements and are the action statements used to translate the goals into a working educational program.

Objectives can be generally classified in one of three levels. Refer to the table to distinguish among the three types.

**Table 1: Three Levels of Objectives**

<b>Level</b>	<b>Type</b>	<b>Formulated</b>	<b>Highlight</b>
Level I	Broad objectives	Created at the college board level	Revision rarely occurs
Level II	General statements, but more specific	Created at the department or program level	Usually an outline that shows a process to accomplish the Level I objectives
Level III	Behaviorally stated objectives	Created by program instructor or instructors	Describe the desired outcomes, what will be used to assess the outcomes, & expected level of performance

As stated in the table, Level III objectives are behaviorally stated. Behavioral objectives must be stated in such manners that they describe what learners are doing when they are learning. Behaviorally stated objectives accomplish two purposes: (1) students know what is expected of them, (2) allows instructors to measure the effectiveness of the students' work. When the two purposes are accomplished, objectives communicate to a specific group of students, for example surgical technology students, the expected outcomes of a particular unit of instruction.

The advantages of behavior objectives as opposed to instructional objectives:

- Direct the instructional activities in the classroom.
- Provide a basis for evaluation of students by the instructor.
- Aid in identifying specific behaviors to be changed.

The disadvantages include:

- Often behavioral objectives are too simplistic and human behavior is much more complex.
- Alternatives or choices are limited.
- Ignore the interaction and relation of human activity.

Well-written behavioral objectives contain three important parts:

1. An observable action must be identified to indicate that learning on the part of the student has taken place.
2. A description of the conditions under which the learning and/or behavior is expected to occur.
3. The performance criteria should be described.

The simplest method of developing a behavioral objective is to use the A, B, C, and D method. A stands for the audience, B for behavior, C for condition, and D for the degree of completion. By using this method a behavioral objective will be complete. For example:

- A The student (audience) will
- B successfully complete the gowning and gloving procedure (behavior)
- C during the lab period (condition)
- D with a performance of 100% correct (degree)

### **/H3/ Three Taxonomies of Learning**

When planning the learning process, the instructor should consider what is specifically intended for the student to learn. Then an appropriate objective can be formed to guide the learner and instructor in the classroom. Curriculum developers are familiar with the routine variance between what is established as the intention of the curriculum during program development and what is actually delivered to the student in the classroom. One reason for this discrepancy is not going through the process of forming complete objectives and refining them. A recommended approach is referring to the three taxonomies of learning: (1) cognitive domain, (2) affective domain, and (3) psychomotor domain. (Surgical technology program directors and instructors should be familiar with these three domains since the three words are recited in the curriculum portion of the CAAHEP Standards and Guidelines for accredited programs).

Each of these taxonomies were developed to assist the curriculum planner in pinpointing the level of learning desired to take place in the classroom, hence the formation of goals and objectives. The three taxonomies interact to achieve an ordered process of learning and aid in providing direction to the complex act of teaching. Bloom (1956) views the cognitive domain (mental processing of information) as a six-level model beginning with the most simple processing referred to as knowledge to the most complex, evaluation. Krathwohl's (1964) affective domain is a five-level model that examines the "degree of "feeling" experienced by the students" (Wiles & Bondi, 1998) concerning the material studied in the classroom or lab. Harrow's (1972) psychomotor domain provides a progression of the physical response to the learning situations. The

reader is referred to the books by Bloom, Krathwohl, and Harrow for more detailed information concerning the domains.

For example, as previously stated, the instructor should consider what is specifically intended for the student to learn and then write the corresponding complete behavioral objective to guide the instruction in the classroom. If the students are to be taught the surgical procedure laparoscopic cholecystectomy, what is the instructor's intention? Does the instructor want the students to *know* about it (Bloom's first level) or be able to analyze the steps of the procedure (Bloom's fourth level)? The corresponding levels of feeling and physical response would also be involved.

The above information may seem to present a complex process for writing objectives, but without well-thought out objectives, the translation of program goals will be haphazard. Additionally, familiarization with the terminology, in particular the three taxonomies of learning, will help the instructor and program directors better understand how the guidelines for accreditation are interpreted.

## **/H2/ Needs Focusing**

Brief comments will only be presented concerning needs focusing. This is another basic task of curriculum development that requires the reader to perform personal research to gain an in-depth perspective.

Needs focusing is an assessment of the needs of the learner and represents an investigation into how outside factors such as local population characteristics affect the program. This inquiry can result in an adjustment of the curriculum goals, objectives, instructional techniques, and student expectations.

The data to be gathered in a needs assessment is determined by the local characteristics. Needs assessment are usually completed by the program or school within the area of location, as opposed to accreditation site visits and outcomes surveys that typically use outside individuals to make observations about the status of the program. Consequently, the emphasis of needs assessment as related to curriculum development is not what exists, but how the data influences the program.

The first step of needs assessment is to decide what data is needed to help in decision making and the second step is developing a strategy for gathering the data. The process may require the use of more than one group, such as a committee comprised of public members of the community, a business group, or a mixed committee of educators from the community and college. Important information can be obtained about local industry that could affect the operation of the program.

The following are other areas of investigation:

- General Information: natural resources of the region, median income, demographic characteristics
- Population Characteristics: growth patterns, median age, predominant educational level of population, predicted growth
- Programs and Courses Offered in School District: course offerings in high schools, special program needs, organization of high school and college programs
- Student Data: student graduation rates, student achievement

There are many other areas of data to be gathered due to their possible influence upon program curriculum development.

## **/H2/ Curriculum Alignment**

The development of the program philosophy, goals, and objectives for learning fall under the broad heading of **scope**. Once this has been determined, the curriculum must be **sequenced** or aligned. The two words have been bolded to emphasize their importance as two of the key words in curriculum development. They will be further discussed in the next section Stages of the Curriculum Planning Process.

Curriculum mapping is an effective tool for aligning the curriculum. The mapping process produces a product in which the learning materials and experiences encountered by the student are presented in an organized manner. The process also forces the instructor to arrange the course content, skills to be attained, and objectives in the most optimal manner for learning, including placing the correct amount of emphasis on each area of information to be addressed. Too often instructors teach material without asking herself/himself why are they teaching it to the students. Curriculum mapping is an aid in answering the question. The following table is a basic format for curriculum mapping.

Table 2: Curriculum Mapping

<b>Content Outline</b>	<b>Desired Outcome</b>	<b>Performance Objectives</b>	<b>Skills</b>	<b>Text/Learning Materials</b>



Two additional advantages of curriculum mapping:

- Allows the instructor to view the program in totality and identify redundancy in the scope and sequence of the overall curriculum.
- View and understand the interrelatedness of the various parts of the curriculum as an aid in coordinating the instruction to take place.

## **/H1/ Planning the Teaching Process**

“If learning can be defined as having the student learn what the teacher intends in the form that the teacher desires, careful planning must occur prior to teaching” (Wiles & Bondi, 1998). The following information is presented as a method for implementing the curriculum and planning the teaching process. Step one, as compared to the other steps in the process, is discussed in detail.

### **/H2/ Step One**

Instructors are familiar with the various types of curriculum plans or the mapping that was presented in Table 2. The plan provides the instructor with an overall view of what is needed to achieve an end result. The instructor should study the plan prior to teaching to determine how their part of the educational process of the student fits within the plan to meet the objectives.

While analyzing the curricular plan, the instructor must ask questions of themselves to help determine the **scope** (how much is to be learned) and the **sequence** (order of learning). Because these two words are so often discussed in conjunction with curriculum development, a third equally important term is often overlooked, **balance** (value of the various areas). When considering these three concepts, the instructor must also complete a **time analysis**, how much can be studied and learned given the task at

hand. This puts pressure on the instructor to determine which content is the most important. These terms are the heart of analyzing the curricular plan. It cannot be emphasized enough that all instructors, whether they teach elementary aged children to adult learners, must understand these terms and their interrelatedness.

Let's look at an example to better understand the terms. Surgical technology instructors are familiar with the *Core Curriculum for Surgical Technology* published by the Association of Surgical Technologists. Within the curriculum is a section concerning the surgical procedures that are to be taught. The curriculum also states that for each surgical specialty to be taught the following is to be discussed: preoperative preparations, anatomy & physiology, pathology, positioning, anesthesia & other medications, back table & Mayo stand set-up, intraoperative steps of the procedure, possible postoperative complications, etc.

Obviously, not every surgical procedure listed in the core curriculum can be so thoroughly discussed. For example, the list for the section on hernias includes umbilical, inguinal, femoral, and ventral repairs. The instructor is faced with determining the following:

1. Time Analysis: How much can be taught within the allotted amount of time?
2. Scope: How much should be learned? Should every hernia procedure be taught in depth? Can one or two procedures be taught in depth, and the remaining procedures briefly reviewed?
3. Sequence: In what order should the procedures be taught?

4. Balance: Does one procedure take precedence over another procedure? In other words, is it more important to teach one procedure as compared to the others?

Most likely, the instructor will realize that it is a wise decision to choose an operation that best represents all of the other similar procedures and discuss that particular procedure in depth. The chosen procedure will cover the anatomy and physiology that is typically encountered in all of the related procedures, including the other areas to be discussed such as preoperative preparation and positioning. The related surgical procedures can then be briefly discussed and the material is adequately covered in the proper time frame. This does not “short-change” the students learning, they are well prepared to perform the procedures during surgical rotation, and the instructor has established a pattern of teaching within the curricular plan.

## **/H2/ Step Two**

The instructor is now ready to coordinate the content with an assessment of the students' ability. The following should be considered:

- An analysis of the audience (students)
- Capability of the students to master the curriculum. Do they have prior experience or knowledge that provides a base? What is their level of maturity?
- Is the material relevant to the student? Do the objectives need to be reformed?

The instructor is then able to adjust the plan to fit the needs of the students. This

is where teaching can be considered an art form, where the instructor is the one who best knows the students and with a stroke of the brush makes adjustments that are unique to the classroom situation.

### **/H2/ Step Three**

Step three is when the instructor develops and designs how the instruction in the classroom is to take place. The instructor is working in the “if-then” mode. For example, the instructor realizes that the rules of aseptic technique must be taught and the students are poor readers, but good visual learners, then he/she must.....

Only after an analysis of the situation can the instructional design(s), selection of teaching method(s), and selection of teaching technique(s) be completed. The instructor can also plan the activities that will be most useful and order the whole strategic approach to teaching for optimal effect.

### **/H2/ Step Four**

The teacher teaches; the plan is implemented in the classroom. This is when all of the planning pays off by having an ordered set of events to present to the students.

Obviously, as all instructors know, adjustments have to be made along the way due to such variables as a lot of questions from the students that take up time. However, organization is the key to dealing with such a complex activity called teaching.

Organization reveals that the instructor understands the whole curriculum development process for accomplishing the objectives that were written at the beginning of the plan.

### **/H2/ Step Five**

Step five addresses the importance of feedback. An important question the instructor should ask is, “What change will I see in the students when I am done?”

Teaching is about learning and exacting a change in the students behavior. The instructor should select assessment tools that provide evidence of students having knowledge and skills they did not have prior to the teaching act.

Good instructors will be able to display the documentation and assessment tools in order for others to review that student learning have occurred. The most common evidence of learning is testing, but a form that is gaining popularity among instructors is the use of portfolios. Many instructors feel that portfolios and other assessment methods are a more “true” assessment of the student learning, providing a better mode of feedback. The argument is that many students are not good test takers, and therefore a portfolio allows the student a better method of displaying their knowledge.

## **/H2/ Step Six**

Last, an instructor involved in the work of curriculum will be a judge of her/his own teaching. An instructor who wishes to improve and become a “master teacher” will reflect upon and analyze their work in the classroom. If necessary, planning adjustments can be made for future classroom sessions. Additionally and most importantly, the instructor needs to compare the planned curriculum outcomes with what was expected; basically, what were the results of the teaching act.

## **/H1/ Conclusion**

Curriculum development is an area of knowledge that requires much study and research to fully grasp the breadth of the discipline. This short introduction is just a beginning and the reader is highly encouraged to further investigate the basic concepts that were presented. As the 21<sup>st</sup> century progresses, major curriculum designs will most likely occur due to the technological advances in society and the alternatives for learning

that will become available. The questions of curriculum planners could very well become “What is the purpose of schools, why should they exist, and how should they exist?”

As William Doll (1993) wrote:

I believe a new sense of educational order will emerge, as well as a new relation between teachers and students, culminating in a new concept of curriculum. The linear, sequential, easily quantifiable ordering system dominating education today could easily give way to a more complex, pluralistic, unpredictable system or network. Such a complex network, like life itself, would always be in transition, in process.

## References

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## Appendix I

## List of Educational Organizations and Associations

American Association for Higher Education  
One DuPont Circle, NW  
Washington, DC 20036

American Council on Education  
One DuPont Circle, NW  
Washington, DC 20036

American Educational Research Association  
1230 17<sup>th</sup> St., NW  
Washington, DC 20036

American Vocational Association, Inc.  
1510 H St., NW  
Washington, DC 20005

Association for Supervision and Curriculum Development (ASCD)  
125 N. West St.  
Washington, DC 20006

National Association for Public Continuing Adult Education  
1201 16<sup>th</sup> St., NW  
Washington, DC 20036

National Education Association  
1201 16<sup>th</sup> St., NW  
Washington, DC 20036

National Institute of Education  
555 New Jersey Avenue, NW  
Washington, DC 20208

Office of Education  
Office of the Assistant Secretary  
Room 3153  
400 Maryland Avenue, SW  
Washington, DC 20202



## Appendix II

### Curriculum Development Internet Sites

Association for Supervision and Curriculum Development (ASCD):  
<http://www.ascd.org/index>

Index of ASCD Books: <http://www.ascd.org/market/resources/books/list>

International Association for Evaluation of Educational Achievement (IEA):  
<http://uttou2.to.utwente.nl/>

Public Service Curriculum Exchange: <http://cases.pubaf.washington.edu/0c:/ps.html/>