Guide to the
NC 4-H Curriculum Development Process
revised 2015

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Introduction to the NC 4-H Curriculum Development Process

Curriculum within NC 4-H is hereby defined as a dynamic written document that provides an instructional map and educational materials for use by educators and students in multiple delivery modes to guide students' knowledge acquisition (see also: Clements, 2007; Battista & Clements, 2000; Bauchamp, 1981). Over the past 4 years, the NC 4-H Curriculum Development Team has tested and refined a curriculum development model that incorporates research-based content as produced at the university level into a comprehensive field-tested curriculum package and includes evaluation from inception to delivery to review. This model builds on the principles and best practices in the field of education and allows for the finished curriculum to be dynamic and responsive to changes in content knowledge. This document provides an overview of the NC 4-H Curriculum Development Process.

With a national call for evidence- and research-based curriculum, it might be reasonably expected that defining these characteristics would be a simple task. However, there are multiple thoughts on what makes curricula research-based (Clements, 2007). According to Tyler (1949), curriculum should 1) be based on defined learning objectives; 2) incorporate learning experiences that focus on meeting those objectives; 3) organize those learning experiences so that they build on each other; and 4) include evaluation to determine the effectiveness of the curriculum. Although Tyler's work is well over half a century old, it still serves as a foundation in curriculum development as does the work of John Dewey (1902).

Dewey's (1902) model for experiential learning is critical to the work of 4-H and demands that curriculum incorporate the past and present experiences of students in a

way that allows them to use those experiences along with new, hands-on experiences

to scaffold learning to develop new knowledge and behaviors. To be effective in

producing permanent learning, an experiential learning curriculum must provide content

and skills that are important to the student, must elicit strong emotions in the student,

and must allow immediate application of the content (Jennings, Germaine, & Begay,

1996). Experiential learning occurs when individuals engage in some activity, reflect

upon the activity critically, derive some useful insight from the analysis, and incorporate

the result through a change in understanding and/or behavior" (Luckner & Nadler, 1997,

p.3). Experiential learning is both a philosophical approach toward teaching and

learning as well as a method for instruction. The method of experiential learning

requires that the student experience a developmentally appropriate learning activity

after which they are guided through reflection on the activity, discover through

discussion how the activity generalizes or applies to other situations, has an opportunity

to apply the new knowledge, and moves on to another experience that builds upon what

they have learned (Luckner & Nadler, 1997). This model of experiencing, reflecting,

generalizing, and applying is at the center of everything 4-H does and is therefore used

as an outline in the creation of all 4-H curricula.

     The Curriculum Research Framework established by Clements (2007)

incorporates the work of Tyler (1949), Dewey, (1902) and others into a ten-step model

created for use in large scale educational intervention studies. According to Clements,

the development of research-based curriculum requires curriculum writers to create

curriculum:

> from existing research so that what is already known can be applied
> to the anticipated curriculum, structure and revise the nature and

content of curricular components in accordance with models of children's thinking and learning in a domain; and conduct formative and summative evaluations in a series of progressively expanding social contexts. Thus, research should be present in all phases of the curriculum development and research process (p. 37).

This definition of research-based curriculum and the inclusion of research throughout the curriculum development process as prescribed by Clements provides the foundation for the NC 4-H Curriculum Development Process as outlined within this document.

History of the 4-H Curriculum Development Model

Needs Assessment and the First Advisory Board

In 2010, the 4-H Program Leader met with members of the 4-H Program Team to determine the future direction for NC 4-H Curriculum. The team was instructed to develop a plan that would allow for content alignment with grades K-12 , that would be research-based and holistic in delivery, to position North Carolina 4-H as a national leader in curriculum development. A process was to be developed to create curriculum to meet these goals.

After that meeting, steps were taken to invite stakeholders to come together to discuss the needs for curriculum in North Carolina. Stakeholders included: NC New Schools Project, NC Department of Public Instruction, NC Department of Juvenile Justice, Private Industry, Local Education Agencies, 4-H Volunteers, 4-H Agents, District Extension Directors, University Content Specialist, and 4-H Youth. This diverse pool of leaders were charged with conducting a statewide needs assessment, surveying and interviewing stakeholders in education and industry with a strong focus on K-12 educators, youth, community, and parents. The goal of this assessment was to provide a logical roadmap for 4-H curriculum development over the next five to eight years.

Using the data, the NC 4-H Curriculum Advisory Team identified nine critical themes for 4-H Curricula Development, with an emphasis on incorporating science and math into all nine themes. The Curriculum Advisory Team noted a specific need for subject-focused curriculum to span multiple delivery modes, include built-in assessments, and provide scaffolding across grade levels. Additionally, the needs assessment data revealed and the Curriculum Advisory Team reiterated the need for

evidence-based curricula targeting youth in grades K-5 while ensuring that older youth (grades 6-12) remain engaged. The themes identified by the advisory team are listed below. It is important to note that National 4-H (2010) identified similar themes with 34 states participating in its assessment.

1. Life skills (e.g., goal setting, decision-making, personal safety, communication)
2. Research Methods
3. Importance of contributing to society
4. Relationships between plant, animals, environment
5. Relation between school, work, life (e.g., real world math and science)
6. Importance of Reading
7. Healthy Living
8. Technology Safety
9. Learning to Learn

Ties to National 4-H

As a part of the 4-H National Program, it is important that North Carolina 4-H use many of the same standards for developing curricula as put forth by National 4-H. These standards, are outlined in more detail on the National 4-H Website http://www.4-h.org/resource-library/curriculum/development/develop/).

The components of the National 4-H Model include:

- Support mission mandates which target the content areas of Science, Healthy Living, and Citizenship.

- Provide inclusive and diverse learning experiences within authentic contexts.

- Incorporate critical life skills into each lesson.

- Use constructivist learning principles to develop inquiry-based and experiential learning activities

- Ensure that lessons are developmentally appropriate.

- Include research-based, obtainable objectives within a scope and sequence.

- Curriculum should be holistic and comprehensive.

- Learning is valued as a lifelong process in which both youth and adults benefit.

Jury Review Process

When working with youth, agents are expected to use existing 4-H curriculum. However, there are times when 4-H curriculum that includes the desired subject matter is not available. Agents must show that they have researched all recommended avenues for 4-H curriculum before researching curriculum outside 4-H. Suggested avenues are North Carolina 4-H Moodle Site, National 4-H Mall, and MY4-H (contains a National 4-H directory of all content based curriculum by land grant universities). If desired content is still not found to be usable, the agent can then go out and find suitable research-based instructional materials from federal partners such as eXtension, the Center for Disease Control, the National Science Foundation, the National Institute of Health. However, the agent must ensure that the instructional materials outside of the recommended avenues meet the National 4-H Youth Development guidelines. A document with step-by-step instructions for review of curriculum found outside of acceptable 4-H avenues is provided in the 4-H moodle through the NC 4-H Website to assist agents in determining whether lessons meet the National 4-H Youth Development guidelines.

NC 4-H Curriculum Development Process

Needs Assessment

Before developing curriculum, it is critical to determine the relevance of that curriculum to meet the needs of youth across North Carolina and, when possible, the United States. A needs assessment assists in fulfilling this goal. A needs assessment is a systematic process of determining the gaps between current outcomes and desired outcomes (Kaufman & English, 1979). A needs assessment is a tool for "constructive and positive change - not change solely driven by controversy...but rational, logical, functional change which meets the needs of citizens, educators, and learners" (Kaufman & English, 1979, p. 8). The needs assessment process for North Carolina 4-H curriculum development uses a systematic approach to identify stakeholders, conduct environmental scans and climate studies, prioritize needs and gaps in existing curricula, and identify resources to meet those needs.

1. Identify stakeholders: Identifying stakeholders is a vital component to the success of a curriculum. Stakeholders can contribute to a number of roles within the scope of the curriculum development process. Examples of stakeholders can include but are not limited to: Federal government, private industry, local and state government, educators, volunteers, private citizens, community based organizations, private foundation, and youth.

2. Environmental Scan: An environmental scan is a systematic approach to collecting information to make it possible for decision makers to understand their context and the interconnections of various parts of that context thereby enabling those decision makers to use that information in strategic planning (Morrison, 1992). Environmental scanning is a way to collect and organize information about current and potential events that will or might impact a particular group,

organization, or issue. In this technological age, having a systematic approach to filtering and weighting information is more important than ever. Literature reviews, research with stakeholders, and public records are examples of products that might be included in an environmental scan.

3. Identify Needs and Gaps: Once information is collected from available sources, stakeholders use this information to identify needs and to prioritize those needs. Also a part of this phase of the needs assessment process is the creation of a strategic plan to address the needs that are determined most critical.

4. Identify Resources: Once priorities are set, it is time for find resources including staff, funding, space, and other necessary materials to address priority needs.

Advisory Board

North Carolina 4-H curriculum is developed with the support of volunteers who guide the development of the proposed curriculum. These episodic volunteers become the curriculum advisory team. Each team is made up of stakeholders with different areas of expertise and is comprised of subject matter specialists, business, volunteers, youth, and 4-H professionals. The role of this team is to assist 4-H in the development of curricula so that it can be universal for both formal and non-formal educational settings. Including these diverse stakeholders allows the curricula to be comprehensive and to incorporate multiple perspectives.

Curriculum Writing

Curriculum in 4-H is either written by a content specialist or by a writer under the direction of a content specialist. Content specialists are professionals with expertise in a particular subject area. These specialists may be researchers, professors, or other
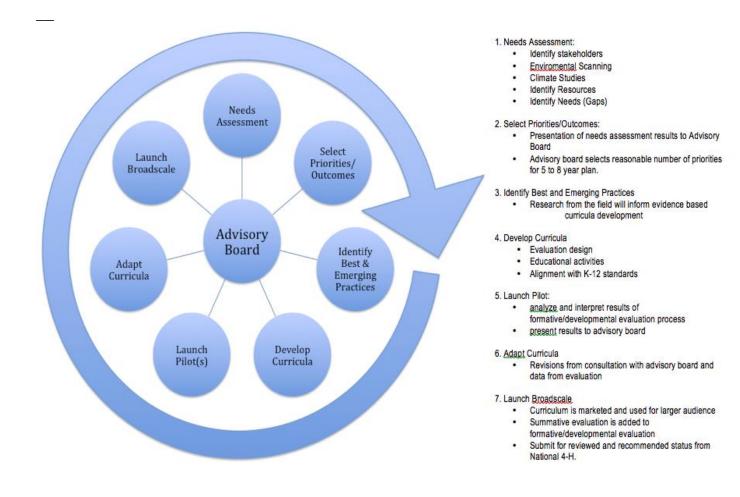
professionals who collaborate with the 4-H team to use their expertise to inform and create a curriculum that is holistic and based on the 4-H youth development approach. Because creating holistic effective curricula is time intensive, many content specialists choose to hire a curriculum writer to do a significant portion of the curriculum development. Curriculum writers are contracted or biweekly employees. Whether the content specialist or curriculum writer or both write the curriculum, the development of the curriculum follows the 4-H Curriculum Development Process and Model.

Steps in the 4-H Curriculum Development Process

1. Review of Relevant Research - The writer reviews research related to the proposed curriculum to determine what aspects from research may be used to inform the curriculum.

2. Meeting with Advisory Board - When the writer is satisfied with their research review, they will work through the 4-H Curriculum Development team to determine relevant advisory board members for the project. A scheduled a meeting with the advisory board will then be set to select priorities and outcomes as related to state and national standards to include in the curriculum.

3. Identifying Best & Emerging Practices - Once priorities and outcomes are established, the writer, specialist, and 4-H team work together to identify existing programs and best practices to include within the developing curriculum.

4. Alignment with K-12 standards - The writer works with the 4-H curriculum lead to align the curriculum with existing K-12 standards.

5. Scope and sequence development - The writer takes all of the information from each of the previous steps to develop a scope and sequence or a curriculum action plan that outlines proposed activities, standards, and objectives for each lesson.

6. Meet with Advisory Board - Once the scope and sequence are established, a meeting with the advisory board is scheduled and held to review the direction of the curriculum. Advisory board meets at least three times either face to face or non-face to face.

7. Development of Curriculum Components - The writer begins developing lesson plans and activities using the National 4-H lesson plan template. Lessons are built using the experiential learning model and the 4-H life skills development model, and other educational models to accommodate multiple learning styles. Special attention is given to creating lessons that are developmentally appropriate for the targeted age group and that are based on established practices for diversity and inclusion. As lessons are built, materials lists are created so that a curriculum kit that includes consumable and non consumable materials for the lessons can be developed. Activities are tested before piloted.

8. Review by Advisory Board - Once the draft of the curriculum is complete, all pieces are sent to the advisory board members for review. The advisory board provides feedback within a specified time period for the writer to incorporate into the curriculum.

Figure 1:
The NC 4-H Curriculum Development Model

1. Needs Assessment:
   - Identify stakeholders
   - Enviromental Scanning
   - Climate Studies
   - Identify Resources
   - Identify Needs (Gaps)

2. Select Priorities/Outcomes:
   - Presentation of needs assessment results to Advisory Board
   - Advisory board selects reasonable number of priorities for 5 to 8 year plan.

3. Identify Best and Emerging Practices
   - Research from the field will inform evidence based curricula development

4. Develop Curricula
   - Evaluation design
   - Educational activities
   - Alignment with K-12 standards

5. Launch Pilot:
   - analyze and interpret results of formative/developmental evaluation process
   - present results to advisory board

6. Adapt Curricula
   - Revisions from consultation with advisory board and data from evaluation

7. Launch Broadscale
   - Curriculum is marketed and used for larger audience
   - Summative evaluation is added to formative/developmental evaluation
   - Submit for reviewed and recommended status from National 4-H.

NC 4-H Curriculum Evaluation

Every curriculum that NC 4-H develops is accompanied by a utilization-focused evaluation activities and measures. The goal of utilization-focused evaluation is to increase the use of evaluation results by working with stakeholders who are the primary intended users of the evaluation to produce a product that they are more likely to use (Patton, 1997; Christie & Alkin, 2003). To this end, the NC 4-H Curriculum Development team includes an evaluator during all stages of curriculum conceptualization and development. Evaluation of 4-H curriculum includes both formative and summative evaluation processes. As Robert Stake explains, "When the cook tastes the soup, that's

formative; when the guests taste the soup, that's summative" (Scriven, 1991, p. 169).

Formative evaluation is useful in determining what works and what needs to change as educators implement the curriculum in the different 4-H delivery modes. Summative evaluation is useful in determining whether youth are learning based on the prescribed curriculum objectives.

Working with the content specialist to inform the needs assessment and to create the advisory board are the first parts of the formative evaluation process. Each time the advisory board reviews the curriculum is part of the formative evaluation process. Once the curriculum is ready for pilot, educators who deliver the curriculum use established measures that include open-ended lesson journals and a summative curriculum rating scale to evaluate the curriculum. Each time a lesson is taught, educators complete a journal for that lesson that includes among other factors, a description of what worked, what was missing, what did not work, what should be added, and what the educator added to strengthen the curriculum. Once they complete all curriculum lessons, the educator rates the curriculum on the NC 4-H sixteen-factor curriculum rating scale and provide any additional feedback that might assist in revising and finalizing the curriculum.

Once the curriculum scope and sequence is developed and the youth objectives are clearly outlined, an evaluation measures for targeted youth are developed. These measures include either pre-post or post-then-pre retrospective surveys with multiple choice, Likert-type response, and open-ended survey items. These youth measures provide qualitative and quantitative data that is used to determine whether the curriculum-specific youth objectives are met and to inform the curriculum review

process. In addition to objectives, youth are asked to give feedback on the curriculum strengths, weaknesses, and any additions they would like to see. These youth measures are part summative or goal-oriented and part formative or process-oriented.

When data collection is complete, a final report is created and shared with the curriculum writer, the content specialist, the 4-H Curriculum Development Team, and the advisory board. This final report includes statistical analyses of youth summative data as well as content analyses from both youth and educator qualitative data. These analyses are used to inform the final curriculum revision and process.

Pilot Process

Once the curriculum has undergone revisions requested by the advisory board and the 4-H Curriculum Development Team, the draft curriculum will then be piloted across the state for a total of 4 to 7 months. A statewide email is sent out to recruit willing county agents to participate. This includes the 4-H, FCS, or Agriculture agents with selected volunteers. Because 4-H curriculum is holistic, it is encouraged that the county agent considers which 4-H delivery mode best fits the pilot learning environment. Agents are required to partner with volunteers who will deliver the draft curriculum during the pilot process.

An agreement is signed specifying the roles of the state 4-H/FCS office and the county office during the curriculum pilot. This agreement contain general statements pertaining to evaluation requirements, financial support, content support, and time lines and action plans.

In order to align with school calendars, pilot training is aligned in the fall. A two day workshop is conducted that walks the agents and the volunteer through the curriculum, activities,evaluation protocol, and pilot expectations.

Curriculum Review and Adaptations

Once the pilot is complete, the data is shared with the advisory board, writer and content specialist. Any necessary revisions or additions are made at this time. Once changes are made the curriculum will go through graphics design for final imaging and packaging.

Submit for National 4-H Review and Recommended Status

The curriculum is then ready for submission for jury by National 4-H to be considered for reviewed and recommended status. This is the process National 4-H uses to recognize excellence and promote curriculum nationally.

Broadscale Launch

The curriculum is then ready for broadscale launch statewide. For this process, the agents across the state are provided access to curriculum at a statewide training and through the 4-H moodle site.

What if Good Research-based Curriculum Already Exists?

Because content specialists sometimes develop outstanding curricula before partnering with 4-H there is room in the process to assess and review curriculum that does not go through the full development process. When a content specialist brings a

curriculum to 4-H for use with 4-H agents across the state that was not developed in partnership with 4-H, a team of reviewers including a content specialist, a youth development specialist, and a general reader to evaluate flow and readability are recruited by the 4-H Curriculum Development Team to determine whether the curriculum meets or exceeds standards as set out by National 4-H. The reviewers can rate the curriculum as meets or exceeds standards, needs revision, or does not meet standards. If revision is required, review comments are provided to the content specialist. Once changes are complete and documentation of those changes are sent to the 4-H curriculum development team, the curriculum is approved for statewide use.

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