Teacher Education Priorities of Family and Consumer Sciences Teacher Education Programs: A Modified Delphi Study

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The Delphi Method, a research strategy incorporating both qualitative and quantitative research methods, was utilized to develop a list of content (knowledge), skills and experiences seen as priorities needed in Family and Consumer Sciences (FCS) teacher education preparation, according to experts in the field. The subsequent priority list was then compared by experts, FCS teacher educators, with the National Standards for Teachers of Family and Consumer Sciences (National Association of Teacher Educators for Family and Consumer Sciences, 2004) to determine the degree of congruency. The results of this review can be used by FCS teacher educators to insure that FCS teacher education programs are teaching the content (knowledge) and skills and providing experiences that meet the National Standards. These findings may be used to improve teacher education programs and the FCS teachers they produce.

The purpose of this research was to determine Family and Consumer Sciences (FCS) teacher education content (knowledge), skills and experiences that are priorities from the perspective of the FCS teacher educator. This was an attempt to answer the question: Do FCS teacher educators concur that the *National Standards for Teachers of Family and Consumer Sciences* (hereafter referred to as National Standards) are priorities in FCS teacher education?

The objective of this article is to report the research findings and compare the identified priorities with the *National Standards* (National Association of Teacher Educators for Family and Consumer Sciences [NATEFACS], 2004). Determining the priorities was considered important in order to verify that FCS teacher education programs are preparing new FCS teachers, as recommended by NATEFACS. The importance of this verification cannot be overstated: If the information obtained from FCS teacher educators revealed a disparity between their priorities and the National Standards, the quality of the product (the FCS student) could be called into question.

Like essential knowledge and skills identified for the graduate of every profession, National Standards for teachers of FCS are regarded as gold standards for the content and competencies deemed necessary for teacher educators to impart to their students. They are considered benchmarks for the knowledge and skills expected of the graduate. To assure consistency in the quality of the product (the new FCS teacher), it was deemed necessary to explore the extent to which the *National Standards* are believed to be important in FCS teacher education programs.

National Standards Background

The development of *National Standards* for teachers of family and consumer sciences was preceded in 1998 by the development of National Standards which outlined objectives for middle school and high school student learning. These standards were developed in an effort to address the many changes that had impacted the discipline over the years, as it evolved from a focus on home economics to a broader focus on the issues inherent in family and consumer

sciences. It was logical, then, to develop National Standards for teachers of family and consumer sciences (Fox, Stewart, & Erickson, 2008).

Over a two year period, the *National Standards* were developed in response to the Interstate New Teacher Assessment and Support Consortium (INTASC, 1992) which proposed 10 principles that described knowledge, disposition and performance deemed essential for new teachers. Specific standards for discipline areas such as Family and Consumer Sciences Education were to be added, later.

In 2001, NATEFACS officers initiated the development of discipline-specific national standards to meet the needs of the increasingly standards-based k-12 and higher education environments. The "Exploration Phase" included communication among the officers on the management of the process and review of newly developed standards for several states and national organizations connected to teacher standards. At the 2002 Association of Career and Technology Education conference, a session investigating need for and support of the development of the National Standards resulted in their confirmation (Fox et al., 2008).

In 2003, the current president, president-elect, and past-president of NATEFACS (Wanda Fox, Daisy Stewart, and Patricia Erickson, respectively) accepted the responsibilities of leadership. This marked the start of the second phase in the development of the National Standards---the Foundations Phase, which became known as the "Project to Develop National Standards for Teachers of Family and Consumer Sciences." Through feedback obtained at conference presentations, NATEFACS officer meetings, project committees, a variety of professional communications and face-to-face work, a draft of the National Standards was developed (Fox et al., 2008).

The third phase entitled the Framework Phase began in January of 2004. A draft was developed and disseminated for review through emails and NATAFACS and American Association of Family and Consumer Sciences 2004 meetings (Fox et al., 2008).

The Final Design Phase included obtaining input via an on-line survey from stakeholders who had attended conference meetings or had expressed interest. A smaller panel then reviewed and synthesized the data collected. This meeting yielded the National Standards which were approved in December of 2004 (Fox et al., 2008).

Since the *National Standards* had been around since 2004, it was decided to investigate the degree to which these standards are now valued by FCS teacher educators. In 2010, the question concerning the extent to which FCS teacher educators value the National Standards was addressed.

The rationale for developing *National Standards* came from the awareness that such standards for family and consumer sciences teachers were necessary to allow the discipline to take part in the national trend toward standards-based teacher licensure, teacher education and accreditation of programs. The same rationale exists today.

Two primary concepts provide the structure for the *National Standards*, Content and Professional Practice. Standards number 1 through 4 focus on FCS content while Standards number 5 through 10 relate to professional practice. Content includes all of the subject matter a beginning teacher in family and consumer sciences should know. Whereas, professional practice refers to all that a beginning teacher in family and consumer sciences should be able to do (National Association of Teacher Educators for Family and Consumer Sciences, 2004). Thus, the…

The National Standards should impact undergraduate FCS teacher education curricula.

Becoming an effective teacher relies on qualities ranging from general pedagogical

competencies to content-specific knowledge and skills (Danielson, 1996; Fox et al., 2008; Shulman, 1987).

Producing highly qualified teachers is a major goal of education reform. No Child Left Behind legislation calls for prepared teachers who know "what to teach, how to teach and [have] command of the subject matter being taught" (U.S. Department of Education, n.d., ¶2). If FCS teacher educators are to play a meaningful role in the workforce of the future, FCS teacher education programs must answer the call for the preparation of highly qualified teachers.

The research was conducted using the Delphi Method, a research strategy that employs both qualitative and quantitative methodologies—and involves sequential administration of a series of questionnaires to enable a group of experts (in this case, FCS teacher educators) to reach consensus on an issue. The Delphi method can be characterized as including (a) consultation with a group of experts serving as panel members who respond anonymously; (b) a number of different rounds; (c) feedback of results; and (d) participants being given the opportunity to revise their opinions (Linstone & Turoff, 1975).

The Delphi Method has previously been utilized in Family and Consumer Sciences research. Combs and Hall (1996) attempted to characterize anticipated postsecondary and adult FCS education programs using this method. Couch, Felstehausen and Webber (1998) used the Delphi Method in their research, rating the importance of employability skills across child care competency areas. Neill and Stout (1998) used the method to identify portfolio evidences that would show mastery of the proficiencies adopted by the state. Meanwhile, Miller (1997) used the method to identify approaches preferred to teach nutrition by FCS teachers.

Methodology

The 2008 membership roster of the National Association of Teacher Educators for Family and Consumer Sciences (NATEFACS) was used to identify possible members of a panel of experts (M.J. Pickard, NATEFACS treasurer, March, 2009). Members were surveyed during the summer months of 2009. An email containing an invitation to participate in the study went out to 164 NATEFACS members. Forty teacher educators (24.4%) contacted by email participated in Round One. The panel of experts completing both Rounds Two and Three consisted of 21 (53%) of the Round One respondents. While there is no one panel size advocated for Delphi Method studies, it is recommended that 15-30 carefully selected panel members are appropriate for a heterogeneous population (Martino, 1972).

In total, the study included three rounds. In Round One, the online questionnaire included the following open-ended item to which a panel of experts was asked to generate responses: "Identify up to 10 content (knowledge), skills and experiences that are important for professional preparation of 6-12th grade Family and Consumer Sciences teachers." From the responses generated, the researchers, two FCS teacher educators with 16 years combined experience at the post-secondary level and 12 combined years of high school classroom teaching experience, collapsed 178 qualitative responses received from 40 teacher educators into 33 content (knowledge), skills and experiences based on commonalities.

In Round Two, panel members rated the 33 identified content (knowledge), skills and experiences based on importance using the following scale: Strongly agree = 6, Agree = 5, Somewhat Agree = 4, Somewhat Disagree = 3, Disagree = 2 and Strongly Disagree = 1 (see Table 1). The researchers then calculated means of the responses for each of the identified content, skills and experiences. The panel was asked to review the means generated in Round Two. These means represented the collective opinions of the panel as to the importance of rated content, skills and experiences.

In Round Three, the panel was asked to review these means (collective opinions) and again rate the 33 identified content, skills and experiences based on importance using the scale utilized in Round Two (see Table 2).

One month prior to the close of each round, an e-mail reminder was sent to each panel member who participated in the previous round. Approximately three months passed between Rounds One and Two and roughly one month passed between Rounds Two and Three. Descriptive statistics, including means and standard deviations (SD) for the ratings were computed for each priority topic. Topics were ranked in descending order based on means. The mean was chosen as the primary measurement for comparing rating scores. For most distributions the mean is the most accurate and efficient estimate of a population (Murray & Jarman, 1987; Hsu & Sandford, 2007)**.**

The second criterion chosen to interpret the results of the study was the interquartile range (IQR), a useful measure of variability which is equal to the difference between the third and first quartiles (Heather, Dallolio, Hutchings, Kaner, & White, 2004; Tierney & Fox, 2009). Following an approach used by Heather et al. to interpret the IQR findings, teacher education priorities with an IQR of 0.0 were determined to have very high consensus; those with an IQR of $\leq$1.0 were determined to have consensus; and those with an IQR >1.0 were determined to have little or no consensus. According to Murphy et al. (1998)**,** as long as a study includes eight or more participants, the IQR provides an appropriate way to aggregate judgments, as they are independent of extreme values and are less susceptible to a skew in the distribution of responses.

Lastly, the percentage of agreement for each research topic was used to establish the reliability of an observer's judgment by comparing it to the observations of other observers. Consistency of responses was used to determine inter-rater reliability among the panel members. Percent agreement reflected the degree of consistency among members' responses. As recommended by Hayes and Hatch (1999), 62.5% was used as the minimum level of agreement to establish reliability among panel members' responses on a six-point scale.

Findings

The findings of this study demonstrate that the Delphi Method was effective in developing a consensus regarding the importance of concepts covered in the *National Standards* among FCS teacher educators**.** Descriptive data from Round Two are reported in Table 1, with the 33 priority topics listed in descending order by means. Standard deviations ranged from 0.3 to 1.25, thus showing negligible variation in the panel members' responses. Percent of agreement ranged from 20% to 82% with 62.5% used as the minimum level of agreement to establish reliability among panel members' responses on a six-point scale.

Table 1
Importance of Teacher Education Priorities -- Delphi Method/Round Two

Rank	Content (knowledge), Skills and Experience	Mean	SD	IQR	% of Agreement
1	Teaching methods, curriculum and resources	5.90	0.30	0	82%
2	Personal financial literacy	5.86	0.36	0	74%
3	Parenting skills	5.86	0.36	0	74%
4	Relationship skills	5.86	0.36	0	74%
5	Health, nutrition and wellness	5.81	0.40	0	68%
6	Critical thinking including ethical decision making and problem solving	5.81	0.40	0	68%
7	Family communication skills	5.79	0.42	0	65%
8	Written and oral communication skills	5.76	0.44	0.5	62%
9	Strong student teaching experience	5.75	0.44	0.75	61%
10	Child and human development	5.71	0.46	1	57%
11	Consumer economics and resource management	5.62	0.50	1	50%
12	Adolescent growth and development	5.62	0.50	1	50%
13	Reflection on classroom performance	5.62	0.59	1	50%
14	Food science, theory, techniques and food preparation skills	5.48	0.75	1	43%
15	Interpersonal skills across the life span	5.48	0.68	1	42%
16	Professional organization involvement and participation at some level	5.48	0.60	1	43%
17	Marketing of the FCS program	5.38	0.67	1	39%
18	Students need FCS skills to stay healthy and productive	5.29	0.64	1	40%
19	Basic job hunting skills, interviewing, resumes, portfolio development (job requisition skills)	5.29	0.72	1	36%
20	Obtaining observation hours in secondary schools, early in students' course work	5.29	0.85	1.5	36%
21	Understanding of cultural differences	5.29	0.72	1	36%
22	Development of written lesson and unit plans based on the National Standards	5.14	0.73	1	44%
23	Practicum experiences in all areas and grade levels of FCS	5.10	0.77	1.5	32%
24	Experiences with FCCLA	5.10	1.04	2	30%
25	Program funding rules and regulations	5.0	0.63	0	43%
26	Clothing selection, care and repair	4.95	1.02	2	28%

27	Historical and current perspective of FCS	4.95	0.67	0.5	39%
28	Technology application for personal use and career	4.79	0.85	1	36%
29	Housing needs and design of interior space	4.76	0.62	1	42%
30	Grant writing	4.76	0.89	0.5	28%
31	Gerontology	4.43	0.98	1	30%
32	Apparel and textiles	4.19	1.25	1.5	22%
33	Basic clothing and construction techniques	4.05	1.23	2	20%

Note. N = 21

The IQR ranged from 0.0 to 2.0 indicating very high consensus to little or no consensus. The top 7 ranked priorities met the 62.5% of agreement standard required to establish reliability among panel members' responses as well as achieved very high consensus among panel members by achieving an IQR of 0.0.

Descriptive data from Round Two are reported in Table 2; topics are listed in descending order by means. Revisions in ranking by panel members were made on the bases of reconsideration of the items and the respective statistics provided. Standard deviations ranged from 0.0 to 1.17 thus showing negligible variation in the panel members' responses. Percent of agreement ranged from 20% to 82% with 62.5% used as the minimum level of agreement to establish reliability among panel members' responses on a six-point scale. The IQR proved to be 0.0 to 1.0, indicating very high consensus to consensus for 32 of the priorities, and only one of the priorities showed little or no consensus (IQR = 2.0). The top 12 ranked priorities met the 62.5% of agreement standard required to establish reliability among panel members' responses as well as achieved very high consensus among panel members by achieving an IQR of 0.0.

The top three ranked priorities following Round Three were as follows: first, critical thinking (including ethical decision making and problem solving), second, relationship skills and third, family communication skills. Each of these met 100% of agreement among panel members. In addition, the SD proved to be 0.0, meaning no variation existed in the panel members' responses.

Teacher education priorities ranked fourth through eighth included teaching methods, curriculum and resources (4th); written and oral communications (5th); health, nutrition and wellness (6th); parenting skills (7th); and strong student teaching experiences (8th). The five priorities ranged from 80% to 90% of agreement among panel members, with an SD ranging from 0.22 to 0.44.

The priorities ranked ninth through twelfth included adolescent growth and development (9th), personal financial literacy (10th), child and human development (11th) and reflection on classroom performance (12th). These ranged from 68% to 74% of agreement among panel members with an SD ranging from 0.36 to 0.51.

Table 2

Importance of Teacher Education Priorities -- Delphi Method/Round Three

Rank	Content (knowledge), Skills and Experience	Mean	SD	IQR	% of Agreement
1	Critical thinking including ethical decision making and problem solving	6	0	0	100%
2	Relationship skills	6	0	0	100%
3	Family communication skills	6	0	0	100%
4	Teaching methods, curriculum and resources	5.95	0.22	0	90%
5	Written and oral communication skills	5.95	0.22	0	90%
6	Health, nutrition and wellness	5.90	0.30	0	82%
7	Parenting skills	5.90	0.44	0	90%
8	Strong student teaching experience	5.90	0.31	0	81%
9	Adolescent growth and development	5.86	0.36	0	74%
10	Personal financial literacy	5.81	0.40	0	68%
11	Child and human development	5.81	0.40	0	68%
12	Reflection on classroom performance	5.81	0.51	0	73%
13	Marketing of the FCS program	5.71	0.46	1	57%
14	Consumer economics and resource management	5.71	0.73	0	57%
15	Obtaining observation hours in secondary schools, early in students' course work	5.67	0.58	1	55%
16	Interpersonal skills across the life span	5.65	0.67	0.75	57%
17	Food science, theory, techniques and food preparation skills	5.60	0.75	0.75	57%
18	Professional organization involvement and participation at some level	5.52	0.60	1	45%
19	Understanding of cultural differences	5.48	0.68	1	42%
20	Students need FCS skills to stay healthy and productive	5.38	0.59	1	43%
21	Historical and current perspective of FCS	5.33	0.48	1	53%
22	Basic job hunting skills, interviewing, resumes, portfolio development (job requisition skills)	5.19	0.81	1	35%
23	Experiences with FCCLA	5.10	1.09	1	31%
24	Program funding rules and regulations	5.10	0.54	0	53%
25	Clothing selection, care and repair	5.00	0.63	0	43%
26	Development of written lesson and unit plans based on the National Standards	4.95	0.74	0	41%

27	Practicum experiences in all areas and grade levels of FCS	4.95	0.69	0	50%
28	Technology application for personal use and career	4.86	0.73	0.5	41%
29	Housing needs and design of interior space	4.71	0.56	1	47%
30	Grant writing	4.62	0.80	1	32%
31	Gerontology	4.57	0.81	1	41%
32	Apparel and textiles	4.48	1.08	1	32%
33	Basic clothing and construction techniques	4.10	1.17	2	20%

Note. N = 21

The resulting analysis identified at least one priority for each of the ten *National Standards*. Table 3 lists each of the ten *National Standards*. The priorities were then matched to each of the ten *National Standards*. Note that some of the priorities are matched with more than one of the *National Standards*. The two FCS teacher educators who initially designed the study accomplished the matching of priorities to the *National Standards* through extensive discussion and debate.

Three priorities were identified which do not clearly fit with any one of the *National Standards* but actually traverse all of the standards. The first of the three priorities is "Strong student teaching experience" which was ranked eighth. This priority ranking had 81% of agreement among teacher educators with an SD of 0.31 and an IQR of 0.0. The second priority, "Observation hours in secondary schools early in students' course work" ranked 15th, with 55% of agreement among teacher educators, an SD of 0.58 and an IQR of 1.0. Finally, "Practicum experiences in all areas and grade levels of FCS" ranked 27th with 50% of agreement among teacher educators, an SD of 0.69 and an IQR of 0.0.

Table 3
Delphi Panel Indentified Priorities As Related to National Standards for Teachers of FCS.

Ten National Standards	Rank	Teacher Education Priorities
1. Career, Community, and Family Connections	22	Basic job hunting skills, interviewing, resumes, portfolio development (job requisition skills)
	28	Technology application for personal use and career
2. Consumer Economics and Family Resources	10	Personal financial literacy[a]
	14	Consumer economics and resource management
	25	Clothing selection, care and repair
	29	Housing needs and design of interior space
	32	Apparel and textiles
	33	Basic clothing and construction techniques
3. Family and Human Development	2	Relationship skills[a]
	3	Family communication skills[a]
	7	Parenting skills[a]

	9	Adolescent growth and development[a]
	11	Child and human development[a]
	16	Interpersonal skills across the life span
	31	Gerontology
4. Nutrition, Food and Wellness	6	Health, nutrition and wellness[a]
	17	Food science, theory, techniques and food preparation skills
5. Curriculum Development	4	Teaching methods, curriculum and resources[a]
	26	Development of written lesson and unit plans based on the National Standards
6. Instructional Strategies and Resources	1	Critical thinking including ethical decision making and problem solving[a]
	4	Teaching methods, curriculum and resources[a]
	5	Written and oral communication skills[a]
7. Learning Environment	5	Written and oral communication skills[a]
	9	Adolescent growth and development[a]
	19	Understanding of cultural differences
8. Professionalism	5	Written and oral communication skills[a]
	13	Marketing of the FCS program
	18	Professional organization involvement and participation at some level
	21	Historical and current perspective of FCS
	30	Grant writing
9. Student and Program Assessment	12	Reflection on classroom performance[a]
10. Student Organization Integration	23	Experiences with FCCLA
	24	Program funding rules and regulations

Note. N = 21

[a]IQR of 0.0 indicates very high consensus among teacher educators and 62.5% of agreement minimum level of agreement needed to establish reliability.

Discussion and Conclusion

The Delphi Method employed in this research appears to be conducive to the examination of content (knowledge), skills and experiences that are important for professional preparation of 6-12th grade FCS teachers. However, to mitigate the possibility of investigator bias, the study should be replicated with more than two FCS teacher educators or content experts providing insight into the matching of priorities and the National Standards.

Seven high ranking teacher education priorities focused on FCS content consistent with Standards #1 through #4 have resulted from this study. "Content" includes all of the subject

matter a beginning teacher in family and consumer sciences should know (National Association of Teacher Educators for Family and Consumer Sciences, 2004). These met the IQR of 0.0, indicating very high consensus among teacher educators and demonstrated 62.5% of agreement among teacher educators, which is the minimum level of agreement needed to establish reliability. They include (a) personal financial literacy, (b) relationship skills, (c) family communication skills, (d) parenting skills, (e) adolescent growth and development, (f) child and human development and (g) health, nutrition and wellness.

Likewise, Standards #5 through #10 relate to professional practice and are represented by the following teacher education priorities that met the consensus and agreement standards of this research: (a) teaching methods, curriculum and resources, (b) critical thinking including ethical decision making and problem solving, (c), written and oral communication, (d) adolescent growth and development, and (e) reflection of classroom performance. The concept "Professional Practice" refers to all that such an individual should be able to do (National Association of Teacher Educators for Family and Consumer Sciences, 2004).

Although the priorities were congruent with the *National Standards*, some standards were better supported than others. For example, Consumer Economics and Family Resources (Standard #2), Family and Human Development (Standard #3) and Professionalism (Standard #8) seem to be thoroughly addressed; Student and Program Assessment (Standard #9) is only minimally addressed.

It is important to note that there is disconnect between Standard #9, "Student and Program Assessment" and priorities identified by teacher educators in this study. Teacher educators generated only one priority associated with this standard. Further investigation as to the value teacher educators place on student and program assessment is needed.

While Standards #1, 2 and 10 were matched with priorities identified by teacher educators in this study, the priorities were not consistently ranked highly nor did they meet an IQR that indicated consensus. Likewise, they did not reach the level of agreement needed to establish reliability. For example, Standard #1, Career, Community, and Family Connections was matched with two priorities: “Basic job hunting skills, interviewing, resumes, portfolio development (job requisition skills)” ranked 22nd and “Technology application for personal use and career” ranked 28th. The same holds true with Standard #10 and to some degree with Standard #2. It may be that low ranking of priorities matched with a Standard may indicate that the Standard itself is not highly valued by FCS teacher educators. However, before this can be verified, an additional round(s) may be necessary to achieve an IQR indicating consensus among teacher educators and a level of percentage of agreement needed to establish reliability.

Three priorities were identified which do not clearly fit with any one of the *National Standards*, “Strong student teaching experience,” “Observation hours in secondary schools early in students’ course work” and “Practicum experiences in all areas and grade levels of FCS.” Perhaps these three priorities traverse all of the Standards, particularly Standard #5 “Curriculum Development” and Standard #6 “Instructional Strategies and Resources.” Consequently, it could be reasonably concluded that these priorities do provide students with attainment of Standards #5 and 6, and to some degree all ten. A closer look at the matched priorities identified by FCS teacher educators revealed that these priorities expose students to content and allow them to observe and practice teaching skills.

Further investigation of the priorities identified for each of the ten *National Standards* could lead to possible improvement of FCS teacher education programs. A question which arose during analysis of the data was whether or not FCS teacher educators who participated in the

study actually incorporate the priorities identified in their curricula. Consequently, further research is needed to verify that the *National Standards* play a role in program development, curriculum alignment and implementation in FCS teacher education programs.

By its nature, Family and Consumer Sciences as a discipline consisting of *living* content, i.e. content which must continually adapt to a changing society. Thus, replications of this study may be a component of continuous evaluation of the *National Standards*. The knowledge base for the FCS teacher is very diverse, ranging from hard sciences to social sciences. Secondly, the passage of time influences the discipline. Governmental policy at all levels, research in the hard sciences and social sciences all impact what is taught in FCS classrooms.

For example, “Consumer economics and resource management” ranked 14th. This is possible, considering that the full impact of the U.S. national financial "meltdown" of 2008-2010 did not influence individual U.S. households until after data collection. Therefore, the ranking of this priority might now be higher. In addition, FCS teachers saw the nutritional food pyramid change in 2007 due to new knowledge gleaned from research in biology, chemistry and nutrition, thereby changing basic content to be taught.

Other replications of the study may reveal significant information regarding the examination of content (knowledge), skills and experiences that are important for professional preparation of 6-12th grade Family and Consumer Sciences teachers. Replicating the study with FCS teachers in the first to third year of teaching in order to gain the perspective of the novice could provide valuable feedback as to the effectiveness of teacher education programs in teaching priorities that address the *National Standards*. Another valuable study would be replicating this study with cooperating teachers who supervise FCS student teachers, in order to validate and provide opportunities to refine the priorities identified in this study.

The priorities identified by the teacher educators were found to relate to one or more of the *National Standards*. The priorities appeared to fit closely with the National Standards, with one or more of the priorities matching each of the standards. Determining the connections between the priorities and the *National Standards* indicates that FCS teacher education and respective teacher education programs are effectively preparing new FCS teachers as NATEFACS recommends.

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