

ORIGINAL RESEARCH PAPER

## **A Collaborative Approach to Developing a Validated Competence-Based Curriculum for Health Professions Students**

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**ABSTRACT** **Problem:** *Curricula are developed to educate health professions students to provide efficient and effective health services. In addition to learning their disciplinary perspective, today's students must master the concepts of multidisciplinary team care. Traditionally, curriculum was developed based primarily on the perspectives of the discipline faculty, administration and accrediting agencies. However, now there are multiple groups (other academic educators, consumers and employers of health care providers) who may hold differing perspectives about outcomes expected from these programs.*

**Purpose:** *The purpose of this investigation was to use an innovative methodology to generate and validate a curriculum for health professions students from multiple disciplines.*

**Method:** *A multi-phased method using focus groups, surveys, dissemination and affirmation was presented to identify the concepts and best practices that should be included.*

**Results:** *Several performance-based themes evolved during the interviews and a questionnaire was generated. Academic educators, consumers and employers of health care providers indicated agreement that the components on the survey were realistic and important for health professions students to achieve. Thus, outcomes for a curriculum were validated. The faculty rated several components of the curriculum as less realistic for students to achieve than did the consumers and employers. This investigation suggests it may be necessary for faculty to assist providers and parents in developing more realistic expectations about what students can achieve during their educational program. The approach used in this current project moves the field of the health professions curriculum development to a different level when compared with the traditional curriculum development approaches and should be used by others concerned with multi-professional education to assure the validity of the curricula.*

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## **Introduction**

There is widespread agreement in the need to include knowledge about multi-professional collaboration in curricula for health professions students (e.g. Rosen & Pearce, 2000; Oneha *et al.*, 2001). Currently the challenge is to determine what curricula are needed to develop collaborative members of multi-professional teams (Horsburgh *et al.*, 2001; MacIntosh & McCormack, 2001).

Traditionally, within the university, each school or department develops and implements a curriculum for their own students and students have few opportunities to interact with other related disciplines (e.g. Rolfe *et al.*, 2002; Brody *et al.*, 2004; Utley-Smith, 2004; Wittig, 2004). In order for health care providers to collaboratively function, a knowledge of both the unique competencies of other disciplines as well as recognition of areas of common competency across disciplines is essential (Jordan *et al.*, 2000; Knapp *et al.*, 1999). Some common competencies are required for all students in health professions (Beauchesne & Meservey, 1999; Gettinger *et al.*, 1999; Russell & Hymans, 1999; Torkington *et al.*, 2004). The development of common competencies is expected to result in more cost-effective care and achieve stronger outcomes (Smith *et al.*, 1996; Masterson, 2002). Thus, health professions students should optimally participate in multi-professional learning as well as discipline-specific learning (Mayne & Glascoff, 2002; Dalton *et al.*, 2003).

Little empirical data are available to verify which topics should be incorporated into multi-professional university-based curricula for training health care professionals (Gettinger *et al.*, 1999; Stephenson *et al.*, 2002). Generation of a consensus about the skills needed for the team's ability to work collaboratively is urgently needed (Corrigan & Bishop, 1997; Kinder *et al.*, 2000; Horsburgh & Lamdin, 2002; Pender & de Looy, 2004).

## **Purpose and Context of the Project**

This investigation was undertaken to generate a notion of realistic curriculum outcomes for health professions students as deemed important by groups who hold vested interests in the students' competencies. The context selected for the project was a community-based service learning field placement for undergraduate students who were learning to care for children with chronic health care needs and their families. Because the health needs of these children are complex and demanding, students must engage in collaborative multidisciplinary practices.

A Social Action Research Framework was used to structure the investigation. Action research is a collaborative approach to resolve specific problems through participatory procedures. Collaborative exploration helps stakeholders develop understandings of the problems and create solutions integrating diverse knowledge and experience – expert, professional and lay (McTaggart, 1996; Rapoport, 1970; Stringer, 1999). According to this framework, evaluation of the curriculum by several groups such as educators (health professions university faculty), consumers (parents of young children with chronic health care needs) and employers (agency personnel and administrators) would result in a more constructive analysis of the situation.

## **Methodology**

### *General Description of the Research Design and Sampling Criteria*

An exploratory, descriptive research design using both qualitative and quantitative methodologies was used. Following approval by the Institutional Review Board at the university, consumers, employers and educators were recruited through flyers or by word of mouth. Respondents representing both rural and urban areas throughout the research locale were solicited. A brief letter introducing the project to the consumers and employers and soliciting participants over 18 years of age was distributed to all federally funded child health agencies throughout the Project's locale. A similar letter was distributed to the educators.

### *Phase 1: Focus Group Interviewing*

*Procedures.* Each focus group consisted of only one type of stakeholder, was composed of 3 to 10 participants, and lasted about 75 minutes. Confidentiality was stressed, as some parents were wary that the documentation of what they said would end up in the hands of someone who would take retribution by limiting the services provided for their child. In that the respondents could be easily identified, additional demographics such as socioeconomic status (SES), sex of respondent and ethnicity were not recorded.

To assure continuity, each group interview was facilitated by the same moderator and project assistant. The sessions were conducted in the following sequence using a formal structure and a set of standardized probe questions: (1) introductions (project purpose and participants), (2) questions were introduced one at a time and all participants were encouraged to express their opinions; and (3) summarization and group validation of themes that emerged. Semi-structured probes (Appendix I) were used to organize the interviewing.

The interviews were audio-taped. The tape was a supplement just in case something important, particularly in the exact wording was unclear after the session. Interviewees generally appreciated the fact that taping meant the interviewer was not relying upon sketchy notes, and that the team had an

accurate record of the interview. Recorded interviews were transcribed and typed out verbatim, using a consistent style.

*Analysis.* Two research team members performed qualitative thematic content analysis. In general, the training of the team members should be related to the content of interviews (e.g. level of sensitivity and confidentiality needed), the level of the persons interviewed and the nature of the material sought.

A moderator and assistant ran the focus groups. Strong interpersonal and communication skills were required of the moderator. Although formal academic training on qualitative research was beneficial, it was more important that the moderator have a broad understanding of the aim of the qualitative project. The moderator was required to exercise mild unobtrusive control (e.g. be able to manage group dynamics – for example, deal with participants who were “experts”, dominant talkers, shy and rambler), demonstrate adequate knowledge of the topic, be friendly to the participants and be mentally prepared (e.g. stay alert and free from distractions, have the discipline of listening, and be familiar with the questioning route). The assistant handled the logistics before, during and after the focus group meeting, created a warm and friendly environment, observed the participants for comfort and seating arrangements, took careful notes and monitored the recording equipment.

The moderator and assistant conducted the analysis. A decision was made to use text phrases as the unit of analysis (groupings of words for interpretation of the data). During the first round of the analysis, each person completed the initial identification of themes individually. Each individual read the transcripts, identified the descriptive phrases and captured the essence of the conversation. Each individual then assigned a descriptive name, or code to each relevant phrase and proposed a definition for the code.

The moderator and assistant worked together as a team on the subsequent steps. A level of consensus (100%) was required at each step. Each code was reviewed and discussed. Those codes, which achieved agreement among the analysis team, remained and were arranged into broader categories to define what each category represented. The team then verified the definitions of each category by asking some of the participants to review the results. The final remaining categories represented the major themes in the analysis.

*Results.* Consumers (parents of young children with chronic health care needs,  $n = 16$ ), employers (agency personnel, e.g. administrators and providers,  $n = 30$ ) and educators (university health professions faculty,  $n = 15$ ) participated in the focus group interviews. Respondents described which skills, attitudes, and beliefs were the most important educational outcomes for students prepared to work with children with chronic health care needs and their families.

*Generation of a thematic structure.* Several performance-based themes were identified. The major themes indicated that students should be able to:

(1) communicate effectively with parents of young children with disabilities; (2) consider what is going on in the environment when interpreting children’s performance; (3) access community agencies and other professionals to obtain information and expertise; and (4) function in the “real” world. Table 1 lists the major themes and related sub-themes.

*Phase 2: Construction and Administration of the Questionnaire*

*Procedures.* The major themes generated from the analysis of the focus group data were used to structure the questionnaire. Related sub-themes were used to generate the survey questions.

Evidence-based strategies were used to assure the content validity of the survey. These include reviews by parents of children with special health care needs and experts from several health professions disciplines, comparing the generated themes with the findings from other published works and comparing the themes with best-practice standards from parent/professional organizations and current professional practice guidelines.

The survey consisted of two sections: (1) how *realistic* is it for a student to accomplish the task because of their educational program and (2) how *important* is each topic in the relationship to assuring optimal care for young children and their families. Both sections contained 16 items; each item was

**Table 1.** The relationship of themes of the survey and associated sub-themes

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Themes and sub-themes

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Communicate effectively with parents of young children with disabilities

- communicating effectively
- giving clear information to parents about their child(ren)
- collecting information with appropriate assessment methods
- giving clear information in general

Consider what is going on in the environment when interpreting children’s performance

- finding out about the family’s strong points, their concerns, resources, and priorities
- using the information obtained from the family for planning
- considering what’s going on in the environment when interpreting children’s performance

Access community agencies and other professionals to obtain information and expertise

- helping families to solve problems
- knowing how to facilitate the integration of services for children
- communicating effectively with professionals from other disciplines
- participating in team planning and collaboration
- consulting with teachers and others about the child’s special needs
- accessing community agencies and other professionals

Function in the “real” world

- helping parents accept and understand their child(ren)
  - involving families in their child’s education and development
  - knowing child development
-

answered using a 5 point Likert-type scale ranging either from “very realistic (strongly agree)” to “very unrealistic (strongly disagree)” or “very important (strongly agree)” to “very unimportant (strongly disagree)”. The items on the tool were pilot tested using 30 senior undergraduate health professions students; items were reworded until understandability was achieved. Appendix II contains the survey.

The scoring procedure for the survey was modified from the process used by Ferrans and Powers (1985). The scores on the realistic items were adjusted for each importance score. In other words, the adjusted item score was a relative index, reflecting both the importance rating and realistic rating an individual placed on achievement of the item.

The scoring procedure consisted of: (1) adjusting the raw realistic responses by making zero the midpoint of the scale. In order to center the scale on zero, a value of 3 was subtracted from the realistic response for each item. If the realistic responses were not recoded, similar scores would be achieved by an individual who rated items very unrealistic in an area of high importance or for an individual who rated items very realistic in an area of low importance. The recoding of the realistic response made it possible to take the importance rating into account. (2) Obtaining adjusted item scores by multiplying the recoded realistic score by the importance score, item by item. (3) Obtaining the final scale score by summing the values of all of the adjusted items. To prevent bias due to possible missing scores, the sum of the items was divided by the number of items answered. To eliminate negative values, a value of 10 was added to the final scale score.

*Analysis.* The analysis of the respondents’ demographics consisted of using descriptive statistics. The comparison of group responses on the survey items consisted of using uni-variate statistical procedures.

## **Results**

### *Internal Consistency Reliability*

The resultant scale demonstrated a standardized internal consistency reliability (Cronbach alpha) score of .85. The Cronbach alpha score estimates internal consistency based on the average inter-item correlation among items within an instrument and the number of items. Thus, internal consistency reliability was achieved.

### *Comparison of Parents, Providers and Faculty Ratings*

The demographic characteristics of the parent, provider and faculty participants are shown in Table 2. It was not possible to include additional information to describe the respondents per category due to the possibility of identifying specific respondents.

**Table 2.** Demographics for the consumer, employer and academic educator samples

	Mean	SD
Consumers (Parents); <i>n</i> = 16		
Number of children	1.9	1.06
Employer (Agency Administrator and Personnel); <i>n</i> = 30*		
Number of years employed by agency	2.67 years	7.86
Discipline background of agency staff	Early Childhood Education ( <i>n</i> = 3) Occupational Therapy ( <i>n</i> = 5) Paraprofessional ( <i>n</i> = 2) Physical Therapy ( <i>n</i> = 4) Preschool Teacher ( <i>n</i> = 3) Program Assistant ( <i>n</i> = 2) Social Work ( <i>n</i> = 6) Special Education ( <i>n</i> = 4) Speech Language Pathology ( <i>n</i> = 4) Preschool Director ( <i>n</i> = 1)	
Academic Educator (University Faculty); <i>n</i> = 15*		
Teaching experience with undergraduates	16 years	8.43
Teaching experience with interprofessional courses	16 years	7.81
Discipline background of faculty	Dental Hygiene ( <i>n</i> = 1) Health Educator ( <i>n</i> = 1) Nursing ( <i>n</i> = 1) Nutrition ( <i>n</i> = 1) Occupational Therapy ( <i>n</i> = 1) Physical Therapy ( <i>n</i> = 1) Physician/Pediatrician ( <i>n</i> = 2) Psychology ( <i>n</i> = 2) Public Health ( <i>n</i> = 4) Researcher ( <i>n</i> = 2) Speech Language Pathology/ Audiology ( <i>n</i> = 1) Social Work ( <i>n</i> = 2)	

\*Note: some of the respondents had more than one discipline background so the *n* of cases may not add up to the *n* of discipline backgrounds.

A one-way analysis of variance (ANOVA) procedure was used to analyze the data for each sub-theme. The ANOVA tested for variations across all of the groups at once by comparing the group means of the consumers (parents), the employers (administrators and providers) and the educators (faculty). The adjusted scores were used in the statistical analysis and a significance level of 0.05 was selected. The responses of parents, providers and faculty were statistically significantly different on 8 of the individual scale items and the total adjusted scale score. These results are presented in Table 3.

**Table 3.** Comparison of parent, provider and faculty responses on the subthemes

Subtheme	Parent <sup>a</sup>		Agency <sup>b</sup>		Faculty <sup>c</sup>		F	Sig.	Significantly different pairwise comparisons
	Mean	SD	Mean	SD	Mean	SD			
Helping parents accept and understand their child(ren)	9.125	1.147	8.969	1.092	10.333	1.839	5.751	0.005*	Faculty with parents and providers
Giving clear information to parents about their child(ren)	8.375	0.619	8.469	0.950	9.133	1.125	3.281	0.044*	Faculty with parents and providers
Using the information obtained from the family for planning	8.000	1.317	8.500	0.762	9.200	1.521	4.418	0.016*	Faculty and providers with parents
Knowing child development	7.563	0.964	8.156	0.920	8.533	1.302	3.540	0.035*	Faculty and providers with parents
Knowing how to facilitate the integration of services for children	8.750	1.000	8.833	1.234	10.400	1.550	9.026	0.000**	Faculty with parents and providers
Communicating effectively with professionals from other disciplines	8.563	0.814	8.625	1.212	10.000	1.512	7.654	0.001**	Faculty with parents and providers
Participating in team planning and collaboration	8.438	0.964	8.531	1.135	9.533	1.457	4.411	0.016*	Faculty with parents and providers
Accessing community agencies and other professionals	8.375	1.455	8.688	1.120	9.733	2.187	3.523	0.036*	Faculty and providers with parents
Total scale score	8.503	0.586	8.531	0.598	9.325	.766	9.057	0.000**	Faculty with providers and parents

One-way Analysis of Variance was performed; *p* values are shown; Scheffé procedure used for multiple comparison analysis. <sup>a</sup>*n* = 16; <sup>b</sup>*n* = 30; <sup>c</sup>*n* = 15. \**p* < 0.05; \*\**p* < 0.001.

The Scheffé procedure was used to test how the three groups differed. This multiple comparison procedure was used to determine exactly where the differences exist after a significant F ratio has been obtained. Each possible pair of mean scores was compared to determine if the mean scores were significantly different from each other. For each of the subthemes that achieved a significant F ratio, the mean score of the faculty differed from the mean scores of the parents and the agency personnel ( $p < 0.05$ ). Although significant differences were identified, all items were rated as important and realistic. Only the degree of importance and practicality differed among the respondent groups. In all instances, the mean scores for the faculty indicated that they rated the items as less practical (realistic). In addition, the faculty and providers' mean scores differed from the parents on three items, "using the information obtained from the family for planning", "accessing community agencies and other professionals" and "knowing child development" ( $p < 0.05$ ).

## **Discussion**

The major findings show that all practice competencies were determined as realistic and important. Although several items achieved statistical significance, the importance-realistic ratings amongst the educators, consumers and employers were not disparate. This indicated that all of the competencies were perceived as realistic and important and should be included in the students' curriculum. However, faculty reported that it was less realistic for students to achieve these outcomes during their program. In that faculty spend the most time with students; what this investigation suggested is that it may be necessary for faculty to assist providers and parents to develop more realistic expectations about what students can achieve during their educational program. The greatest number of differences was noted in the category "accessing community agencies and other professionals to obtain information and expertise". The second category in which the faculty's ratings differed from those of the parents and the agency personnel was "functioning in the 'real' world". The other two categories "communicating effectively with parents or young children with disabilities" and "considering what is going on in the environment when interpreting children's performance" had only one item where there was a significant difference.

The faculty reported that it was less likely for students to become proficient at "accessing community agencies and other professionals". Working among communities required mastery of an intricate skill set. All four items which differed significantly in this category, were topics that cannot be imparted through informational lectures in the classroom; rather, they represented a synthesis of experience and approaches learned over time.

Achievement of two items in the "functioning in the 'real' world" category was rated as less realistic by faculty. These items related to accessing and using information in which developing competency required experience and practice,

which was something undergraduate students may not have had the time to master. Perhaps faculty's expectations were that students are able to integrate more of their assessment findings into a cohesive depiction of the child rather than just knowing the components that make up the assessment. Overall, the parents and providers indicated that it was important and realistic for students to collect information with appropriate assessment methods and give clear information. The parents also indicated that it was realistic and important for the student to know child development and use the information obtained for planning; whereas providers focused more on giving clear information.

In contrast to the faculty, parents and providers indicated that students should realistically facilitate communication between families and providers. However, there was 100% agreement among all three groups that "helping parents accept and understand their child(ren)" and "helping families to solve problems" were among the least realistic competencies to be achieved by the students.

Consideration should be given to the possibility of selection bias, as this is the case for all study designs that do not use randomization. Participants who volunteered were those who favorably supported the topic. Selection bias was decreased by the broad distribution of flyers and word-of-mouth invitations to all agency sites throughout the specified locale. However, as research involvement cannot be mandated, the possibility of bias in participation will always be present.

## **Recommendations**

This study demonstrated an approach to validating a curriculum using multiple perspectives. This approach carries the field of health professions' curriculum development to a different level when compared with the traditional approaches. Recommendations include:

- Use the outcomes to structure a valid curriculum for undergraduate multi-professional students who work with children with chronic health needs and their families.
- Engage in discussions between faculty, consumers and employers to clarify expectations about what students can realistically achieve.
- Use the methodology to validate other curricula for health professions students.

## **Conclusion**

In summary, expectations that university faculty could generate a curriculum for students were optimally validated from the perspective of all stakeholders including providers and consumers. A two-phase model built on these

principles was developed for curriculum validation and was presented in this paper. This model is applicable in other programs and settings. The curriculum outcomes generated using this model are ready for implementation and replication in other programs that prepare multi-professional teams to care for children with chronic health needs.

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## Appendix I

### Sample Items from the Interview Guide

What qualities, knowledge and skills you think students need to have in order to work with young children and their families, including children with special needs?

Specifically, what kinds of skills do you think students need, to be able to work with children and their families, in terms of assessing and intervening? What about skills and knowledge that students would need to be able to do consultations?

Now, let's think about students when they graduate. What skills do you think they need in order to be able to work within the larger system, like the health care system, the educational system?

What kinds of knowledge and skills do you think students need to be able to make the child's care accessible?

What about skills that students need to make the child's care family-centered?

What kinds of knowledge and skills do you think students need to be able to provide culturally competent care?

Let's just think about the way students are presently prepared to work with young children and their families. What are the weaknesses in the way students are presently being taught to work with young children and families?

If you could just name almost anything, what would be the most important thing that students would be able to do when working with young children and their families?

## Appendix II

### Survey used for Validation of the Curriculum Components

On this page, decide how *REALISTIC* and *IMPORTANT* it is for university-educated *Undergraduate students* who finish with their educational program to do each of the following:

Use the following scale and write your answer in the boxes on the right side.

If you have no idea about an item, leave the rating blank.

- 1 = Strongly Agree**
- 2 = Agree**
- 3 = Neutral**
- 4 = Disagree**
- 5 = Strongly Disagree**

When students are finished with their educational program, they should be able to work with families of young children by:

It is *REALISTIC* for students to do this. (Write your rating here)

It is *IMPORTANT* for students to do this. (Write your rating here)

- |   |       |       |
|---|-------|-------|
| 1. Communicating effectively  | _____ | _____ |
| 2. Finding out about the family's strong points, their concerns, resources, and priorities  | _____ | _____ |
| 3. Helping families to solve problems   | _____ | _____ |
| 4. Involving families in their child's education and development                            | _____ | _____ |
| 5. Helping parents accept and understand their child(ren)                                   | _____ | _____ |
| 6. Giving clear information to parents about their child(ren)                               | _____ | _____ |
| 7. Collecting information with appropriate assessment methods                               | _____ | _____ |
| 8. Giving clear information in general  | _____ | _____ |
| 9. Using the information obtained from the family for planning                              | _____ | _____ |
| 10. Considering what's going on in the environment when interpreting children's performance | _____ | _____ |
| 11. Knowing child development   | _____ | _____ |
| 12. Knowing how to facilitate the integration of services for children                      | _____ | _____ |
| 13. Communicating effectively with professionals from other disciplines                     | _____ | _____ |
| 14. Participating in team planning and collaboration  | _____ | _____ |
| 15. Accessing community agencies and other professionals                                    | _____ | _____ |
| 16. Consulting with teachers and others about the child's special needs                     | _____ | _____ |