Instructional Practices of Teachers in General Education Classrooms and Gifted Resource Rooms: Development and Validation of the Instructional Practice Questionnaire

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What is This?
The large majority of gifted and talented students across the nation spend all but 2 or 3 hours per week in general education classrooms (e.g., Cox, Daniel, & Boston, 1985; Torrance & Sisk, 2001). The recent educational reform movement stressing equity in education has resulted in a reduction in the number of pull-out or resource room programs for gifted students and more hours in the general education setting (Gallagher, 1997). One of the many problems these students face is the lack of challenge in the work they are assigned in the classroom (Archambault et al., 1993). In order to meet the differentiated needs of gifted students who are taught in general education classrooms, the regular curriculum needs to be modified.

**PUTTING THE RESEARCH TO USE**

Although the positive effects of differentiated education on the learning and development of gifted children have been apparent, differentiation of instructional activities has not been practiced in general education classrooms as widely as in specialized gifted programs. For teachers to provide differentiated instruction, they need to facilitate not only the cognitive development of students but also the students’ social and personal growth. The questionnaire presented in this article can be used for assessing instructional practices of classroom teachers in three domains that are viewed as important for children’s development—cognitive, interpersonal, and intrapersonal. As the instrument becomes available to teachers and administrators, it can serve as a useful tool for professional development, where the need for differentiated education might be underscored through discussion of items in the three domains. The questionnaire would be also useful for researchers who are interested in understanding instructional practices of classroom teachers and in improving classroom instruction for gifted children.
Because they often lacked proper training for education, general education classroom teachers, however, required (Torrance & Sisk, 2001). Typical enrichment approaches employed in the past are inappropriate instructional practices that go beyond the range of achievement levels in all classrooms, and a desire by all teachers to better meet individual needs of all students (Gentry & Owen, 1999). Although the effects of providing differentiated education to the gifted have been shown to be positive (e.g., Barnett & Durden, 1993; Gentry & Owen, 1999), modification and differentiation of instructional activities in general classrooms have not been practiced as widely as in specialized gifted programs (e.g., Archambault et al., 1993). With many gifted and talented students being educated in general education classrooms, a focus on appropriate instructional practices that go beyond the typical enrichment approach employed in the past is required (Torrance & Sisk, 2001).

Positive effects of differentiated education have been reported in various studies. For example, providing opportunities for the gifted to make selections not only enhances motivation but also increases self-image (Schunk, 1991). Students who had taken academically advanced courses eventually enrolled in more advanced college courses, enrolled in those courses at an earlier age, and enrolled in more college courses overall, when compared to the group who had not taken the academically advanced courses (Barnett & Durden, 1993). A differentiated instructional approach applied in a general education program via flexible or cluster grouping also saw positive effects: a significant increase in achievement test scores for gifted students, as well as typical students, more staff development opportunities, teacher ownership in the program, higher teacher expectations, a reduced range of achievement levels in all classrooms, and a desire by all teachers to better meet individual needs of all students (Gentry & Owen, 1999).

For teachers—general education, as well as gifted resource room teachers—to provide differentiated instruction, they need to facilitate not only cognitive development of students but also students’ personal and social growth (Feldhusen, 1997). Teachers and administrators agreed on six basic competencies that teachers of gifted and talented students should acquire: promotion of thinking skills, development of creative problem solving, selection of appropriate methods and materials, facilitation of independent research, knowledge of affective needs, and awareness of the nature of the gifted (Nelson & Prindle, 1992). The literature includes not only cognitive but also interpersonal and intrapersonal domains as important competencies that the gifted need to acquire. Sowa and May (1997) also stress the importance of developing intrapersonal skills, contending that a stronger sense of personal identity promotes trust in one’s cognitive appraisal and helps a person cope with pressures from peers, school, and family. When gifted students develop their interpersonal skills, they become better able to interact and cooperate with their general education and gifted peers, and provide leadership when appropriate in academic and social settings. Competencies in the interpersonal domain might include the ability to understand other individuals and their actions and motivations, and to act productively based on the knowledge about other individuals (Gardner, 1983, 1993).
The needs of gifted and talented students in these domains (cognitive, interpersonal, and intrapersonal) are different from those of typical children, and differential needs cannot be met by identical educational experiences. Although curriculum modification has been discussed in the literature (e.g., Gallagher, Harradine, & Coleman, 1997; Gentry et al., 2001; Marland, 1971; Passow, 1982; Tomlinson, 1999; VanTassel-Baska, 1994; Ward, 1961), little research has been conducted in general education classrooms or gifted resource room settings to ascertain whether or not these differentiated educational opportunities are provided to gifted students. Although a few studies addressed the need for understanding instructional activities for the gifted in the general education environment (e.g., Archambault et al., 1993; Westberg et al., 1993), most of these studies focused on the cognitive development of students, with little attention paid to the interpersonal and intrapersonal development of these students while in school.

One possible reason might be that instruments for assessing instructional practices in the cognitive, as well as interpersonal and intrapersonal, domain are not readily available to educators and researchers in these classroom settings. We believe that new instruments would be useful for general education, as well as resource room, teachers in raising their awareness of the need for the well-rounded development of gifted students and helping teachers improve instructional strategies to meet the needs of the gifted. In the current study, we developed an instrument for assessing teachers’ instructional differentiation in general education classrooms in three domains—cognitive, interpersonal, and intrapersonal. Instrument development procedures and results are presented in three phases: (a) initial instrument development and preliminary validation; (b) instrument revision and further development; and (c) instrument validation. Although the main target population for this study was general education classroom teachers, as part of the validation effort we included gifted resource room teachers to determine if there were any differences in their instructional practices.

Initial Instrument Development

In this section, we present our initial attempt to develop an instrument to measure general education teachers’ instructional practices for gifted students. Development of the initial instrument, preliminary validation, and findings are described briefly.

Literature-Based Questionnaire Item Development and Content Validation

A self-report questionnaire named the Instructional Practices Survey (IPS) was developed to assess general education teachers’ instructional practices for gifted students. We first identified instructional activities that would be helpful in developing skills in the cognitive, interpersonal, and intrapersonal domains, and then items were developed based on the activities identified. The identification of instructional activities and the development of questionnaire items were largely based on two existing sources: (a) The Challenge Curriculum Guide: Gifted and Talented Education Program (GATE program; Clark County School District, 1997), and (b) the Classroom Practices Survey (Archambault et al., 1993). The Challenge Curriculum Guide was used because it identified domains, skill areas, and objectives that gifted resource room teachers in this particular district should address in their classrooms, whereas the Classroom Practice Survey provided examples of instructional activities. These two sources together provided the information and format that we chose to use in our instrument development. The Challenge Curriculum Guide was developed by a team of teachers, a program developer, a curriculum specialist, and a gifted education specialist. The content of the Guide reflects theories and models of gifted education in various literature (e.g., Bloom’s taxonomy, 1956; Guilford’s structure of intellect, 1956; Renzulli’s enrichment triad, 1977; Torrance’s creativity model, 1963) and GATE teachers’ experience and expertise and experiential knowledge and skills from teaching and interacting with gifted students in their classroom.

Each questionnaire item represented an instructional activity for developing a particular skill in one of the three domains. The Curriculum Guide for the gifted and talented students was used to identify the particular skills being targeted (e.g., “The students will demonstrate brainstorming”), and the Classroom Practice Survey was used to identify the specific instructional activities (e.g., “Ask open-ended questions”), with the two parts together creating an item, “Students are given opportunities to demonstrate brainstorming by asking open-ended questions.” Examples of items in the interpersonal and intrapersonal domains are “refine relationships with their gifted peers through ability grouping” and “pursue interests of their own by allowing time for independent study projects,” respectively.

The questionnaire included 28 items, with 12, 10, and 6 items in the cognitive, interpersonal, and intrapersonal domains, respectively.
sonal domain, respectively. Teachers responded to each item using the following 4-point response scale: 1 (rarely), 2 (sometimes), 3 (often), and 4 (almost always). Teachers’ self-reports of their own instructional behavior provided a measure of the extent to which gifted students receive differentiated educational experiences.

Field Testing

During the questionnaire development, three classroom teachers (one from each of the third, fourth, and fifth grades) reviewed questionnaire items for their clarity, relevance, and readability. The questionnaire was revised based on the reviews provided by these teachers (e.g., wording modifications were made).

Preliminary Validation of the Initial Instrument

Participants. Ninety-seven teachers (19 males and 78 females; 40 third-grade teachers, 28 fourth-grade teachers, and 29 fifth-grade teachers) in a large Western school district volunteered to participate in the study. The district was divided into six areas: east, east central, northeast, southeast, northwest, and southwest. Two schools within each area were randomly selected for the study. Third- through fifth-grade teachers were selected because gifted and talented students had been identified within these grades. The school district had an established pull-out program, Gifted and Talented Education (GATE), and licensed GATE specialists taught in these programs. Some of these specialists were assigned to more than one location within their area, with one school being designated as their “home” school.

Data Collection. For questionnaire distribution and data collection purposes, two GATE specialists were selected randomly within each of the six areas of the district and contacted to obtain their consent to assist in the study. The selected specialists were advised of the purpose of the study and asked to distribute and collect the forms. The specialists then asked general education teachers to volunteer to participate in the study. To increase the accuracy of teachers’ reports on their own instructional behaviors, a paragraph describing confidentiality, purposes of research, and use of data in summary form were added to the cover sheet of the questionnaire. Of the 193 survey questionnaires distributed to the classroom teachers, 97 completed survey forms were returned to the researcher, resulting in a response rate of 50.3%.

Data Analysis. Item frequencies, internal consistency estimates, and item discrimination indices were computed for each domain. The results were scrutinized to determine items that needed to be modified or eliminated. We summarized the results and actions taken from this phase only briefly, because the revised version based on this phase was to be subjected to further validation.

An item from the interpersonal domain was not applicable to any of the three grade levels. The item concerned whether teachers gave gifted students opportunities to receive instruction at a higher grade level. Comments written on the questionnaires indicated that some classroom teachers had no higher grade class for their gifted students (fifth graders) or that teachers in some schools were not allowed to send students to a higher grade class. Some items were rarely practiced by general education teachers (e.g., practice decision making within a group setting by requiring a plan for a group study utilizing more advanced curricular units), whereas others were practiced highly (e.g., practice decision making within a group setting by requiring a plan for a group study). The internal consistency estimates (coefficient alpha) were .83, .77, and .81 for the cognitive (12 items), interpersonal (10 items), and intrapersonal (6 items) domain, respectively.

Evaluation and Recommendations for Instrument Revision. Although the reliability estimates were reasonable, some items had sentences that were too long. The most significant recommendation from this observation was to shorten the stem and provide examples of classroom practices in parentheses. It was further recommended that some items be replaced with new items and others be modified. Because there were only six items in the interpersonal domain, two items were added to this domain.

Instrument Revision and Further Development

The initial instrument was revised based on the recommendations from the previous phases. In addition to the literature used in the previous development phase, What I Learned in the Gifted Education Program (Olenchak & Castle, 1997) was also examined in an effort to develop better items. Explicit examples and the format used in this source were useful in the development of the revised questionnaire, which includes explicit sample activities. In addition, it was decided that the instruments would be developed for both general education and gifted resource room teachers for validation purposes. The instruments included items for demographic information, and the name was altered from Instructional Practice Survey to Instructional Practice Questionnaire (IPQ).
As with the IPS developed in the first phase, the Instructional Practice Questionnaire (Greene & Hong, 2001) for general education teachers asked general education teachers to evaluate their classroom-based instructional practices in the cognitive, interpersonal, and intrapersonal educational domains. Demographic information on the survey consisted of grade level taught, gender, ethnicity, level of education, and number of years as a teacher. The IPQ form was the same for both general education teachers and gifted resource room teachers except for an additional demographic item for the latter (years of teaching in the gifted program).

This questionnaire, revised from the IPS, has a common sentence fragment at the top of the questionnaire, “Students are given opportunities to. . . .” Then each item includes a relatively short stem (e.g., “. . . interpret information from various sources”) and three sample activities (e.g., “I encourage research-based reports, assign book reports, or encourage students to compare and contrast ideas from advanced materials”). See the Appendix for a complete set of questionnaire items.

This self-report questionnaire measured differentiated instructional practices teachers used with students in their classrooms. Teachers’ responses provided an indication of the extent to which gifted students received differentiated educational experiences in the classroom. A total of 30 items were in the instructional practices portion of the questionnaire: 12 cognitive, 10 interpersonal, and 8 intrapersonal items. As with the initial questionnaire, teachers were asked to respond to each item on a 4-point scale, from 1 (rarely) to 4 (almost always). A Fry’s Readability (1977) index was calculated for the IPS, the initial version, and the IPQ, the revised version. The readability indicated a 12th-grade reading level for both versions.

Instrument Validation

Content Validation

The content validation process continued from the initial instrument development phase (e.g., literature-based item development, field testing, and item revisions based on the first set of data) to the IPQ validation process (e.g., further inclusion of literature to improve items). During the item revision stage, two university professors from the area of gifted education participated in content validation. They not only checked the items for clarity and readability but also provided expert opinions on items revised from the initial effort of item development.

These experts further examined sample instructional activities to determine whether they represented the intention of items and identified items or sample activities that might not be relevant for the current purpose of instrument development.

In the sections that follow, we present the data collection procedure, internal consistency estimates, item analysis, and construct validity evidences (analysis of factor structures and group differences).

Data Collection

Participants and Setting. The participants were 211 teachers (144 general education teachers and 67 gifted resource room teachers). The study was conducted in a large Southwestern metropolitan school district. Thirty-one elementary schools participated in this phase of the study. Two general education classroom teachers from the third, fourth, and fifth grades were randomly selected from each participating school, with 48 general education teachers from each grade actually participating in the study. Gifted resource room teachers were licensed teachers who had completed 12 graduate-level university credits in gifted education. The 67 gifted resource room teachers who participated in the study represented 66% of the full-time teachers assigned to the gifted and talented education program in the school district.

Procedure. The IPQ was distributed to general education classroom teachers and gifted education teachers. Proper procedures took place for collecting teacher consent forms, contacting and acquiring permissions from school principals, training teachers who volunteered to distribute and collect questionnaires (e.g., a script was provided for teachers to follow while administering questionnaires), and gathering the actual data.

Internal Consistency Estimates

Cronbach’s alpha was calculated for each domain of the IPQ on the data collected from general education and gifted resource room teachers separately. Alpha coefficients ranged from .77 to .90. Alpha coefficients, calculated by eliminating, in turn, each item from its scale, were also examined. The increases in the alpha coefficients were not significant enough to warrant removal of any one of these items, with the exception of one item (Intrapersonal Item 7) that showed a .023 increase of the estimate if it were removed from the questionnaire. At this stage, it was decided that the item not be removed, but be monitored to examine its behavior in subsequent analyses.
Item Analysis

Mean scores of all teachers’ responses ranged from 2.04 to 3.69. The highest mean score was from Intrapersonal Item 7 ("...demonstrate responsibility..."), which is the same item that caused higher reliability when it was removed. This item was one of two items that did not show statistically significant differences between the two teacher groups, whereas all other intrapersonal items showed higher means in the gifted resource room teachers, compared to those of general education teachers ($p < .05$). Within the general education teachers group, this item showed the highest mean ($M = 3.74; SD = .52$) among all other items in this domain (the next highest mean was 2.90), ($143 = 10.57, p < .0005$), whereas within the GATE resource room teachers’ group, this item was the only one ($M = 3.60; SD = .55$) of the high means in this domain, with the five other items scoring over the 3.00 average.

The two highest correlations ($r = .60$) among all items were between two pairs of Intrapersonal items. Although the correlation coefficients were smaller than .70, indicating the two pairs of items were statistically distinguishable, to avoid content or semantic redundancy, these items were reviewed (“demonstrate initiative” and “demonstrate decision-making for individual activities”; “set goals in a self-selected interest area” and “demonstrate task commitment”). It was concluded that the items represented different aspects of instructional activities and the inclusion of the item in the questionnaire was warranted.

Item discrimination indices were computed using item-total correlation coefficients between each item and its domain. One item in the Intrapersonal domain (Item 7 again) correlated less than .20 with its domain when general education teachers’ scores were used (due to the high ratings on this item). However, this item showed an acceptable discrimination index (.49) in the GATE resource room teachers’ group. It was decided that the item was important for the intrapersonal domain but that the subsequent factor analysis was to be conducted with and without the item to determine how the item impacted factor structures.

Construct Validation

Factor Analysis. We first subjected ratings by general education teachers to exploratory factor analysis (EFA) to determine whether the hypothesized three-factor structure underlay the scores of the IPQ. The three-factor hypothesized structure was introduced in the instrument development section through a presentation of the three domains (cognitive, interpersonal, and intrapersonal) contained in the questionnaire. We next subjected the ratings of GATE resource room teachers to EFA to determine if there are structural differences between their reported instructional activities and those of the general education teachers. Although the sample size of the gifted resource room teachers was rather poor for factor analysis, we thought that the factor solutions might represent the group fairly well, due to the large number of correlation coefficients among items ranging between .4 and .6, the relatively small number of factors extracted, and the large proportion of GATE teachers (66% of all full-time GATE teachers in the school district) included in the sample.

First, the teacher ratings on all 30 items of the IPQ were entered for the covariance matrix computation. In addition, a 29-item matrix was also computed without Intrapersonal Item 7 (see Item Analysis above). A preliminary extraction was conducted using principal components analysis, followed by maximum likelihood (ML) factoring and principal axis factoring (PAF). The ML approach estimates factor loadings that are most likely to have produced the observed correlation matrix, whereas the PAF estimates communalities in an attempt to eliminate error variance from factors and maximize variance extracted by factors (Tabachnick & Fidell, 2001). Two factoring procedures were utilized to determine whether the solutions are stable across the two procedures. Both orthogonal and oblique rotations were used to determine if there were sizable correlations between extracted factors. Criteria used for each extraction-rotation combinations were eigenvalue larger than one, and two-, three-, and four-factor solutions. As expected, the solutions on the entire 30 items were not as interpretable as those on the 29 items (Intrapersonal Item 7 excluded). Henceforth, we report the solutions from the 29-item analyses.

Comparisons among the orthogonal and oblique solutions on the ratings of general education teachers indicated that the three factors were correlated, with the sizes of all three coefficients approximating .41 (delta = 0). In addition, the oblique rotation yielded more interpretable factors than the orthogonal rotation. Factor solutions from the ML and PAF procedures were very similar (minor differences in loading sizes). We report the three-factor maximum likelihood solution with oblique rotation that extracted three factors with corresponding items closer to the hypothesized factor structure postulated by the authors than the PAF solution. The three-factor ML solution accounted for 37% of the variance. Table 1 pres-
ents the pattern matrix. The names of the three empirical factors correspond to the three domains in the IPQ.

Except for a small number of items, the three extracted factors corresponded to the three instructional domains established in the IPQ. All original items of the cognitive domain loaded on the cognitive factor. One item’s loading was low (.26), and another item loaded on two factors (cognitive and intrapersonal), with a loading higher on the intrapersonal (.36) than the cognitive factor (.24). This item addresses students’ opportunities to determine relevance and irrelevance.

All original items of the interpersonal domain loaded on the interpersonal factor, with one item loading on two factors (.44 on interpersonal; .41 on cognitive). This item pertained to refining relationships with peers from regular education. All original items of the intrapersonal domain loaded on the intrapersonal factor, with one cognitive item (mentioned above) cross-loaded on this factor. In summary, the factor structure was well-defined with most of the items of extracted factors loading on the hypothesized three dimensions of the original questionnaire.

Factor solutions of the rating of GATE resource room teachers were quite different from those of the general education teachers. Although the three-factor ML solution with the oblique rotation was still most appropriate among all solutions (the solution accounted for 41% of the variance), the factor structure did not correspond to the original three dimensions as cleanly as was found with the sample of general education teachers.

One factor was not well-defined, with all four items loading on two factors (see Table 2). However, all four items of this factor were related to the development of thinking skills regardless of where the domain the items were from originally. The second factor included all cognitive items (with the exception of two), all intrapersonal items, and two interpersonal items (“decision-making” and “cooperating” in groups). Sample instructional practices of these items—whether they are interpersonal or intrapersonal—were related to learning activities. The third factor consisted of all items from the interpersonal domain except for two cognitive items (reading skills and figurative language). Of the interpersonal items, two items also loaded on the second factor. The items of the interpersonal factor concerned refining relationships with their gifted peers and with peers from regular education, and developing and demonstrating leadership skills, active listening skills, empathy, and communication skills; the two cognitive items were not meaningfully interpretable as part of this factor.

The three extracted factors were named as thinking skills, cognitive-intrapersonal, and interpersonal factors (see Table 2). Although the three factors were intercorrelated, the factor correlation between interpersonal and cognitive/intrapersonal was moderate (.49), but the other two coefficients showed no or weak correlation (.01 and .21).

Table 1
Pattern Matrix Obtained From 3-Factor ML Solution Using Ratings of General Educational Teachers (N = 144) Sorted by Size of Factor Loadings

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Label: Interpersonal Intrapersonal Cognitive

Note. Eigenvalues of the three factors prior to rotation were 7.96, 1.43, and 1.42. This matrix presents the loadings without Intrapersonal Item 7 in the computation. Loadings greater than .30 are reported. Loadings in brackets are added to supplement the explanation provided in the body of the paper.

Letters in front of the item number indicate the domain originally assigned in the IPQ. Cog = Cognitive, Inter = Interpersonal, Intra = Intrapersonal.

Label indicates the suggested factor (i.e., extracted factor) name.
In summary, the difference of the factor structures found in the two samples (general education teachers vs. gifted resource room teachers) might suggest underlying differences between these groups of teachers in their instructional practices for gifted children. The construct validity of the cognitive, interpersonal, and intrapersonal domains of instructional practices was evident in the general education teachers’ ratings. The group difference of the factor structure adds to the construct validation evidence provided by examining group differences in the scores of teachers’ self-report on instructional practices provided in the following section.

Group Differences: Instructional Practices Between General Education Teachers and GATE Resource Room Teachers. We next examined whether the domain scores discriminated between the two groups of teachers. Although both groups of teachers work in public schools, where common missions and standards are provided for teachers, the two groups of teachers practice their instructional activities in different classroom settings with students composed of different characteristics. Thus, we predicted significant group differences in their instructional practices (known-group analysis).

Because the main target group for the instrument validation was general education teachers and the items loaded on the three empirical factors corresponded well with those of the three hypothesized factors, we computed domain scores based on the IPQ items originally assigned to each domain. Thus, comparisons of the target group (general education teachers) to the comparison group (gifted resource room teachers) were conducted based on the scores of three domains from the original IPQ.

Before subjecting the domain scores to multivariate analysis, preliminary analyses were conducted to determine whether years of teaching experience had significant relationships with domain scores and with different teacher groups. Statistically significant relationships were indicated between teaching experience and scores in the cognitive domain, $r(211) = .25, p < .0005$, and in the intrapersonal domain, $r(211) = .21, p = .002$, but not in the interpersonal domain, $r(211) = .08, p > .20$. GATE resource room teachers had a higher mean in years of teaching experience ($M = 16.25, SD = 8.51$) than did general education teachers ($M = 10.73, SD = 9.62$), $t(209) = 4.02, p < .0005$. Based on these preliminary results, we decided that teaching experience should be included as a covariate in the subsequent analysis.

A multivariate analysis of covariance (MANCOVA) was performed, followed by three univariate analyses of covariance (ANCOVA). The assumption of the homogeneity of regression coefficient was met, $F(3, 205) = 2.42, p > .05$. The assumptions of the homogeneity of variance and covariance matrices on multivariate (Box’s $M$ test) and univariate analyses (Levene’s test) were met.

### Table 2

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**Label**

- **Thinking**
- **Cognitive**
- **Intrapersonal**
- **Interpersonal**

Note. Eigenvalues of the three factors prior to rotation were 3.64, 6.62, and 1.65. This matrix presents the loadings without Intrapersonal Item 7 in the computation. Loadings greater than .30 are reported. A loading in brackets is added to supplement the explanation provided in the body of the paper.

Letters in front of the item number indicate the domain originally assigned in the IPQ. Cog = Cognitive, Inter = Interpersonal, Intra = Intrapersonal.

Label indicates the suggested factor (i.e., extracted factor) name.
The ratings of general education classroom teachers and gifted resource room teachers were significantly different, $F(3, 206) = 15.49, p < .0005$. The partial $\eta^2$ was .18, indicating moderate association between the groups of teachers and the combined instructional practice scores. Univariate ANCOVAs were statistically significant, indicating that group differences were evident in each of the three domains, all $p < .0005$: cognitive, $F(1, 208) = 28.52, \eta^2 = .12$; interpersonal, $F(1, 208) = 32.46, \eta^2 = .14$; and intrapersonal, $F(1, 208) = 39.46, \eta^2 = .16$. The 12 to 16% domain-score variances accounted for by the group differences were considered reasonably substantial as the participants in the two groups are all public school teachers (as opposed to homeschool teachers or teachers from other types of schools).

The means and standard deviations by domains adjusted (and unadjusted) for covariate are reported for the two groups of teachers in Table 3. The overall results of analysis indicated that general education teachers provided differentiated instruction less often than gifted resource room teachers.

### Table 3

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<th>Domain</th>
<th>General Education</th>
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The current instrument includes three domains (cognitive, interpersonal, and intrapersonal) that are viewed as important aspects of learner development (e.g., Feldhusen, 1997). The initial instrument developed for the general education teacher population was revised based on the findings from a sample. In the next phases of instrument development and validation, data were collected from two samples—general education classroom teachers and gifted resource room teachers—in an effort to present validity evidence for questionnaire scores by providing factorial validity, as well as known-group differences in factor structures and in instructional practice ratings.

Internal consistency estimates and item analysis results indicated that the items in each domain of the revised IPQ had been properly assigned to the hypothesized domain and that each item (except one item in the intrapersonal domain) made a substantial contribution to internal consistency of each domain. One intrapersonal item ("... demonstrate responsibility...") was one of the two items whose means were not significantly different from those of the gifted resource room teachers’ and was the highest mean within this domain in general education teachers. These findings indicate that the item is generic in the sense that most general education teachers instruct students to take responsibility for their actions and also imply that whereas general education teachers emphasize “responsibility” in their classroom practices, to GATE teachers, responsibility was one of many aspects they paid attention to in their resource room instructional activities. Although the subsequent analyses were conducted with and without this item (to prevent possible undue influences of this item on the analysis), it was decided that the item should be included in the IPQ for its importance in student development.

The factor structure of the questionnaire extracted from the sample of general education teachers corresponded well to the hypothesized three-factor structure.
that reflects the three-domain questionnaire. However, the factor structure of the IPQ scores from gifted resource room teachers was less consistent with the originally identified three domains than that from the general education teacher sample. The finding that many cognitive and intrapersonal items loaded on a factor implies a very interesting instructional phenomenon. This might indicate that to GATE teachers, their instructional activities help gifted students develop both cognitive and intrapersonal domains; that is, cognitive and intrapersonal items in the IPQ have common attributes in learning and development of gifted students. Items on the intrapersonal domain are: “pursue interests of their own (e.g., projects),” “demonstrate initiatives (e.g., choose their own activities),” “demonstrate decision making for individual activities,” “set goals in a self-selected interest area,” “demonstrate task commitment, increase autonomy,” “demonstrate responsibility,” and “understand and expand their learning styles.” These intrapersonal activities essentially have high impact on students’ cognitive learning. Thus, it is not surprising that the two domains were extracted as one factor for the GATE teachers who have a few hours with selected gifted students and thus have more opportunities to understand their needs and to provide higher order cognitive activities that require intrapersonal characteristics such as self-direction, self-initiative, and task commitment.

The size of factor correlations between domains provides evidence that the three domains share common characteristics in student development, but to an extent that each domain measures distinct classroom instructional practices (discriminant validity). This finding was more prominent with the general education teacher sample. As discussed in the previous paragraph, the differential findings of the factor structures between the two teacher groups add evidence of discriminant validity in the instrument scores. The pattern of factor correlation coefficients in the gifted resource teacher group indicates the overlapping but discriminating aspects of the three empirical domains, although not as well-defined as those of general education teachers.

Discriminant validity of the IPQ scores was also evidenced by the ability of the IPQ scores to discriminate between the two groups of teachers in the combined (multivariate) and separate (univariate) ratings in the three domains. The GATE teachers reported that they engaged in differentiated instruction more frequently than the general education teachers. The group differences were not only statistically significant but also reasonable in practical significance as the study deals with the two groups of public school teachers who might share a more common mission, curriculum, and instructional activities, compared to other groups such as private or homeschooled. Future studies comparing instructional practices between public and private school teachers might provide further discriminant validity evidence.

Although the investigators made an effort to increase the accuracy in teachers’ self-ratings by explaining the research purpose and confidentiality, it is possible that participating teachers’ self-report did not accurately represent their actual instructional practices in their classroom. For example, teachers might be motivated to present their instructional practices more positively than is realistic. Even if this tendency might have been manifested in both groups (thus canceling out the effect of error variances when comparing the two groups), the findings should be interpreted with caution.

Although the current findings suggest that the IPQ be used for the general education classroom teachers, the findings also identified the items in the IPQ that can profit from revision. For example, items that had weak loadings and items that load on more than one factor need to be examined further and revised, and some items may be added to expand sample activities. The intrapersonal domain may include items that represent planned activities beyond cognitive learning. For example, sample activities for enhancing students’ ability to notice and understand peers’ mood and to modify one’s own response accordingly (Gardner, 1983) might be good additions to the questionnaire. Cognitive, interpersonal, and intrapersonal development in children overlap conceptually and empirically as shown in this study; thus the sample instructional practices in each domain are apparently linked to a common factor, human growth, which spans all aspects of development. Skills learned in one domain should be transferable to learning skills in other domains. The findings from factor analyses also help us understand instructional practices of general education teachers and gifted resource room teachers. The differences found in the factor structure might indicate different types, styles, or approaches of instructional practices taking place in the general education classrooms and gifted resource rooms. However, the relationship between the IPQ data and actual classroom practices, a very worthwhile topic, needs to be examined.

Replication studies are needed that provide validation data from other samples of general education and gifted resource room teachers, as well as teachers in other types of educational institutions. Although efforts were put forth to gather a representative sample of gifted resource room teachers (e.g., the entire GATE teachers in a large school district were targeted for data collection; several
follow-up attempts were made to increase the number of participants, the sample size of the gifted resource room teachers in this study was smaller than desired for factor analysis. Studies at a state or national level that allow collection of large sample data should be part of continued validation efforts. Whether there is a need for a new or modified instrument for gifted resource room teachers and whether gifted resource room teachers perceive and practice instruction in a different manner, as compared to general education teachers, would be interesting areas that warrant future studies.

Nevertheless, the questionnaire may be of considerable use in teaching gifted students. As it becomes available to teachers and administrators, it can serve as a useful tool for professional development, where the need for differentiated education might be underscored through discussion of items in the cognitive, interpersonal, and intrapersonal domains. As the instrument provides sample instructional practices in three domains, it would help teachers be aware of and broaden their classroom practices beyond the cognitive domain. Individual teachers in general education classrooms and gifted resource rooms may assess their instructional practices against the items in the three domains and improve their teaching practices by using the sample activities provided in the questionnaire, especially for those items/activities where their self-ratings are low.

References


Sowa, C., & May, K. (1997). Expanding Lazarus and Folkman’s paradigm to the social and emotional adjustment of gifted
VALIDATION OF INSTRUCTIONAL PRACTICE QUESTIONNAIRE


End Notes

1. Permission to use the materials was obtained.
2. Permission to use the materials was obtained.

Appendix

Instructional Practices Questionnaire

Cognitive

Students are given opportunities to:
(1) develop critical reading skills (e.g., I assign advanced level reading, use advanced text, or provide advanced novels on themes discussed in class).
(2) demonstrate brainstorming skills (e.g., I ask students open-ended questions, provide advanced tasks at learning centers, or provide activities to encourage students to generate ideas).
(3) develop thinking skills (e.g., I teach units on thinking skills, use advanced computer programs, or use puzzles or word searches).
(4) utilize imagination or visualization (e.g., I provide visual material to be interpreted, engage students in visualization exercises, or assign activities in which students demonstrate visual thinking such as creative artwork or writing).
(5) develop writing skills (e.g., I assign teacher-selected creative writing projects, coach students on writing skills, or assign homework so students can practice learned writing skills on self-selected topics).
(6) create figurative language (e.g., I encourage students to participate in class discussions, assign creative or expository writing projects, or encourage students to share ideas, information, and interests).
(7) practice problem solving (e.g., I incorporate problem-solving activities in the grade level curriculum, provide competitive problem-solving programs, or provide questions that encourage reasoning and logical thinking).
(8) interpret information from various sources (e.g., I encourage research-based reports, assign book reports, or encourage students to compare and contrast ideas from advanced materials).
(9) demonstrate transference (e.g., I provide opportunities for students to use prior knowledge when solving problems, encourage students to relate facts to real life, or teach students how information in one situation can be used in another situation).
(10) distinguish fact and opinion (e.g., I coach students on ways to distinguish fact from opinion, provide exercise materials for students so they identify information as fact or opinion, or have students gather facts and opinions as part of homework).
(11) determine relevance and irrelevance (e.g., I require evidence or proof, encourage students to check for accuracy, or encourage students to evaluate whether information is relevant).
(12) accept challenges in learning (e.g., I encourage students to ask high-level questions, help students set criteria for high quality, or encourage students to tackle problems that are considered difficult for their grade level).

Interpersonal

Students are given opportunities to:
(1) refine relationships with their gifted peers (e.g., I sometimes group students by their ability level, provide opportunities for students to work with other advanced students, or encourage students to...
demonstrate the ability to work cooperatively as a group member of gifted peers).

(2) refine relationships with peers from regular education (e.g., I use cooperative group activities, encourage students to organize interest-based groups, or encouraging students to appreciate different learning styles exhibited by other members of the group).

(3) develop leadership skills (e.g., I assign students to various leadership positions, describe students various leadership styles, or provide group activities where various leadership styles can be practiced).

(4) practice active listening skills (e.g., I demonstrate active listening using activities such as role-play, encourage students to provide constructive feedback on their peers' oral presentations, or use group activities where listening skills are encouraged to be used).

(5) practice decision-making within a group setting (e.g., I have students establish activity groups on their own, provide group discussion that requires group decision, or encourage students to demonstrate the ability to compromise for the good of the group).

(6) cooperate with group members (e.g., I encourage students listen to others' suggestions when they participate as a member of a group, use a reward system in which the success of the group is determined by group's efforts, or encourage students to do their best to contribute to their group).

(7) experience risk-taking (e.g., I encourage advanced questions, provide competitive problem-solving activities, or assign activities and games that require high level thinking skills).

(8) demonstrate empathy (e.g., I design units of study in which students have to consider another person's point of view, encourage students to consider the opinion of others, or set a stage for students to recognize other students' social and emotional needs).

(9) demonstrate communication skills (e.g., I demonstrate oral presentation skills using activities such as role-play, coach individual students to improve communication skills whenever an opportunity arise, or provide group activities for the purpose of improving communication skills).

(10) practice group dynamics (e.g., I provide opportunities for students to demonstrate self-discipline during small-group activities, encourage group members to keep the group on task, or encourage group members to consider individual differences in the way other students approach group activities).

### Intrapersonal

Students are given opportunities to:

(1) pursue interests of their own (e.g., I allow in-class time for individual projects, assign writing projects on topics selected by student, or allow students to choose their own topics for research projects).

(2) demonstrate initiative (e.g., I encourage students to establish goals, use learning centers whether students can choose their own activities, or use programmed instructional materials with which students can initiate and monitor their own learning).

(3) demonstrate decision-making for individual activities (e.g., I encourage students to select topics for independent study, allow students to choose work areas other than class, or consider individual students' opinion in allocating time for their projects).

(4) set goals in a self-selected interest area (e.g., I use contracts for individual projects that allow students to list their goals, encourage students to set proper-level goals for projects, or help students develop a long-term goal).

(5) demonstrate task commitment (e.g., I use enrichment activities that encourage students' commitment, use self-instructional kits that contain interesting tasks, or encourage students to demonstrate the ability to keep on task).

(6) increase autonomy (e.g., I provide students with projects that require their initiative, assign projects that allow students to plan and manage independently, or allow students to work by themselves).

(7) demonstrate responsibility (e.g., I help students realize every action comes with a consequence, hold students responsible when they do not turn in homework assignments, or encourage students to complete a given task even when it is a difficult one).

(8) understand and expand their learning styles (e.g., I help students understand that individuals have varied learning styles, provide homework where they can use their preferred learning styles, or tell students think of different ways of studying when their way of studying does not help them learn).