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The Development and Validation of the Diversity Dispositions Index

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The population of the U.S. is becoming increasingly more diverse. Yet, administrators and teachers in the U.S. are predominantly "European Americans from middle-class backgrounds who speak only English. Many of their students are racial and ethnic minorities, live in poverty, and speak a first language other than English" (Banks et al., 2005, p. 237).

The "No Child Left Behind Act" signed into law in 2002 requires school districts to hire highly qualified teachers who possess the necessary dispositions to ensure that all children learn (Center on Education Policy, 2002). School administrators and teachers must understand students' backgrounds and experiences, and they must possess the necessary dispositions to work with students from diverse backgrounds (Villegas & Lucas, 2007).

The National Council for Accreditation of Teacher Education (NCATE) (2002) defines dispositions as "the values, commitments, and professional ethics that influence behaviors toward students, families, colleagues, and

communities and affect student learning, motivation, and development as well as the educator's own professional growth" (p. 53). Some researchers have defined dispositions as the values, commitments, or ethics that are internally held and externally demonstrated (Cudahy, Finnan, Jaruszewicz, & McCarty, 2002), while others have defined dispositions in terms of the interpersonal relationships needed to negotiate the context of schooling (Edwards & Edick, 2006).

A review of the literature on administrator and teacher dispositions failed to identify a perceptual instrument that measures the dispositions needed to work with students from diverse backgrounds (Schulte, Edick, Edwards, & Mackiel, 2004; Schulte & Kowal, 2005).

In response to this need, students in an educational administration doctoral level applied statistics course and a graduate level teacher education course worked together to develop and validate an assessment instrument that measures the dispositions practicing educators need to possess in order to work with students from diverse backgrounds. This article discusses the processes involved in the development and validation of the Diversity Dispositions Index (DDI): adopting a

framework; developing items; providing evidence of content validity; conducting a pilot study; and analyzing data (DeVellis, 2003).

Adopting a Framework

The first step in the scale development process is adopting a framework, which serves as the blueprint for item development. The three propositions of culturally relevant teaching—conception of self and others, social relations, and conceptions of knowledge (Ladson-Billings, 1994)—served as the framework for the DDI.

The propositions of culturally relevant teaching ensure that educators engage students by teaching subject matter in meaningful ways, connecting it to students' lives (Villegas & Lucas, 2007).

The DDI assesses the dispositions of effective educators across the belief, relations, and knowledge indicators specified by the three propositions of culturally relevant teaching (Ladson-Billings, 1994) (see Table 1, page 13). Through culturally relevant teaching students (a) "experience academic success, (b) develop and/or maintain cultural competence, and (c) develop a critical consciousness" (Ladson-Billings, 1995, p. 160).

Table 1

Diversity Dispositions Index Framework
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Proposition #1: Conception of Self and Others

BELIEF 1   Teacher sees herself as an artist, teaching as an art.

BELIEF 2   Teacher sees herself as part of the community and teaching as giving something back to the community, encourages students to do the same.

BELIEF 3   Teachers believe all students can succeed.

BELIEF 4   Teacher helps students make connections between their community, national, and global identities.

BELIEF 5   Teachers see teaching as "pulling knowledge out" – like "mining."
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Proposition #2: Social Relations

RELATIONS 1 Teacher-student relationship is fluid, humanely equitable, extends to interactions beyond the classroom and into the community.

RELATIONS 2 Teacher demonstrates a 'connectedness' with all students.

RELATIONS 3 Teacher encourages a "community of learners."

RELATIONS 4 Teacher encourages students to learn collaboratively. Students are expected to teach each other and be responsible for each other.
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Proposition #3: Conceptions of Knowledge

KNOWLEDGE 1 Knowledge is continuously recreated, recycled, and shared by teachers and students. It is not static or unchanging.

KNOWLEDGE 2 Knowledge is viewed critically.

KNOWLEDGE 3 Teacher is passionate about content.

KNOWLEDGE 4 Teacher helps students develop necessary skills.

KNOWLEDGE 5 Teacher sees excellence as a complex standard that may involve some postulates but takes student diversity and individual differences into account.

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Note: The DDI framework was adopted from work by Ladson-Billings (1994, 1995).

Developing Items

The 15 students in the statistics and teacher education courses possessed the expertise to serve as the item development panel for the DDI. Their roles in the field of education included: professor, teacher, and administrator (principal, assistant principal, and program coordinator). Their years of experience in the field of education ranged from 2 to 28 years (M = 15.67, SD = 7.92). To develop the items for the DDI, the item development panel members read the article by Ladson-Billings (1995), "But That's Just Good Teaching! The Case for Culturally Relevant Pedagogy."

Then, the researchers presented the item development panel with information on culturally relevant teaching, including the propositions and their belief, relations, and knowledge indicators (see Table 1). The researchers provided an example of a possible item for the DDI along with the response scale, which was a 5-point Likert-like scale with words describing each number (i.e., "1" strongly disagree to "5" strongly agree).

Then, the members of the item development panel, the 15 students, broke into six small groups composed of two to three students. Each group brainstormed and developed items that operationally define the dispositions related to one of the culturally relevant teaching propositions. Thus, there were two groups for each proposition. Through the item development process, the item development panel generated 65 items that were reviewed for content validity.

Providing Evidence of Content Validity

To provide evidence of content validity, 25 professional educators (master teachers, administrators, and professors) were recruited to review each of the items created by the item development panel. The content validity panel members' years of experience in the field of

education ranged from 5 to 40 years (M = 18.84, SD = 9.20). They rated each item on a 3-point scale ("1" = not appropriate, "2" = marginally appropriate, and "3" = very appropriate). They were asked to provide recommendations for improving items they rated 1 or 2.

The students in the statistics and teacher education courses (the item development panel) reviewed the input from the content validity panel and made changes to the DDI items by considering each item's ratings and recommendations for revision. Based on the input from the content validity panel, the item development panel reworded 33 items, eliminated 3 items, and added 1 new item. The 63 items retained from the content validity process were then pilot tested to provide evidence of reliability and construct validity.

Conducting a Pilot Study

The participants in the pilot study were 136 graduate students who were representative of the final proposed respondents. Professors in graduate level educational administration and teacher education classes were asked to distribute the DDI to students in their classes who were educators in area K-12 schools. Of the 136 graduate students/educators who completed the DDI, approximately 90% were Caucasian, and 76% were females. Their ages ranged from 22 to 66 (M = 32.56, SD = 8.82). Their years of experience in the field of education ranged from 1 to 33 years (M = 7.23, SD = 6.43). Their certification levels included 44.4% elementary, 41.3% secondary, and 14.3% K-12.

Analyzing Data

Factor and reliability analyses

The data collected from the pilot study were analyzed by the students in the statistics class as part of their final examination in the course. Factor and reliability analyses were conducted to provide evidence of construct validity and

reliability (Kachigan, 1991). Exploratory factor analyses using a principal axis factoring method followed by a varimax rotation of the number of factors extracted and the corresponding scree plot indicated that a three-factor solution best fit the data, accounting for 37% of the variance in the DDI items (see Table 2).

Table 2

Diversity Dispositions Index Items by Factor with Factor Loadings

Factor 1 Items – Educators' Skills in Helping Students Gain Knowledge	*Factor 1 Loading*	*Factor 2 Loading*	*Factor 3 Loading*
1. I teach my students the skills to gain knowledge on their own.	.659	.197	.233
2. I work to develop my students' critical thinking skills.	.577	.255	.181
3. I am successful at creating meaningful relationships between knowledge and new information.	.561	.322	.225
4. Students enter my class with excitement about what the day will bring.	.543	.306	.012
5. I use the teaching "moment" to enhance my students' understanding of today's world.	.542	.307	.187
6. I provide opportunities and structure for my students to work cooperatively.	.515	.238	.155
7. I possess a large repertoire of teaching strategies to help students access their prior knowledge.	.513	.302	.316
8. I create opportunities for my students to express their knowledge in a variety of ways.	.513	.359	.323
9. I create opportunities for and encourage my students to share their knowledge and talents with their peers.	.505	.217	.227
10. I differentiate expectations for individual students.	.496	.045	.271
11. I encourage my students to take responsibility for their own and their peers' learning.	.490	.221	.056
12. I make an effort to build positive relationships with my students' parents/guardians.	.485	.170	.369
13. I deliver instruction using an interactive process that enhances further discovery.	.481	.388	.097
14. Many of my lessons require my students to think critically.	.480	.007	.241
15. I determine where my students are and help them reach their potential.	.479	.307	.102
16. I help students understand their connection to global issues.	.478	.191	.140
17. I continue to reteach my students until they have an understanding of the content.	.448	.157	.093
18. I contact my students' parents/guardians about positive growth.	.431	.188	.277

(Table 2 continued)

Factor 2 Items – Educators' Beliefs and Attitudes about Students and Teaching/Learning	Factor 1 Loading	Factor 2 Loading	Factor 3 Loading
1. I believe that all students can succeed.	.024	.702	.102
2. I believe that all students can learn.	.094	.673	.192
3. I believe that students learn in a variety of ways.	.166	.638	.060
4. I demonstrate enthusiasm for the content I teach.	.266	.614	.075
5. I look for new ways to teach difficult material.	.326	.610	.111
6. I am enthusiastic about sharing knowledge with my students.	.347	.600	.141
7. I collaborate with others in order to learn and grow.	.137	.577	.267
8. I am reflective about how my actions affect student achievement.	.326	.527	.127
9. I can express myself creatively as a teacher.	.274	.517	.172
10. I continue to look for new information to share with my students.	.254	.513	.261
11. I learn from my students.	.236	.509	.267
12. I continually search for new knowledge within my content area.	-.003	.446	.263
13. I am responsible for creating an atmosphere where all students feel free to openly exchange ideas, thoughts, and opinions.	.186	.437	.051
14. I believe in setting high standards for all students.	.319	.436	.147
15. I am passionate about my own learning.	.138	.433	.199
16. I believe that diversity enhances student knowledge.	.399	.406	.319
Factor 3 Items – Educators' Connections with the Community	Factor 1 Loading	Factor 2 Loading	Factor 3 Loading
1. I collaborate on providing community service opportunities for my students.	-.017	.181	.702
2. I plan instructional opportunities for my students to interact with peers, family members, and the whole community.	.159	.205	.624
3. I help my students make connections in their community.	.289	.040	.622
4. I encourage my students to give back to their community.	.169	.175	.545
5. I am involved in the community where I teach.	.205	.018	.531
6. It is important that I attend activities in my students' neighborhoods.	.042	.027	.516
7. I see myself as a part of the community in my role as a teacher.	.088	.275	.511
8. I welcome community members into my classes to share their skills.	.185	.273	.503
9. I work to establish positive school-community relationships.	.303	.213	.449

Using a factor loading cutoff value of .40, items were retained that loaded on one and only one factor because the goal was to create relatively independent composite scores for further statistical analyses. The dominant factor had an eigenvalue of 17.26 and accounted for 27.40% of the total variance. It included items about educators' skills in helping students gain knowledge.

The second factor had an eigenvalue of 3.23 and accounted for 5.12% of the total variance. It included items about educators' beliefs and attitudes about students and teaching/learning. The third factor had an eigenvalue of 2.67 and accounted for 4.24% of the total variance. It included items about educators' connections with the community. As a result of the factor analysis, 20 items were removed, resulting in a 43-item DDI (see Table 2).

The reliability analyses for all three factors indicated that participants were consistent in their responses across items that measured the same construct (Crocker & Algina, 1986). Cronbach's alpha was .91 for Factor 1, .90 for Factor 2, and .84 for Factor 3.

Other analyses
The means and standard deviations for each factor were computed: Factor 1 ($M = 4.26$, $SD = 0.44$); Factor 2 ($M = 4.61$, $SD = 0.34$); Factor 3 ($M = 3.87$, $SD = 0.58$). Respondents rated themselves more positively on their diversity dispositions related to teaching and students than those related to their connections with the community.

Because multiple statistical analyses were conducted, a significance level of .01 was used for the inferential statistical analyses to control for Type I errors. Correlation analyses indicated that participants' responses to the DDI were not related to their age or years of experience with all correlation coefficients less than .24.

Analyses of variance indicated that participants' responses were not related to their ethnicity or certification level. Independent t-tests indicated that female respondents ($M = 4.33$, $SD = 0.42$ (Factor 1); $M = 4.69$, $SD = 0.29$ (Factor 2)) rated themselves significantly more positive than male respondents ($M = 4.06$, $SD = 0.43$ (Factor 1); $M = 4.38$, $SD = 0.41$ (Factor 2)) on their diversity dispositions related to Factors 1 and 2 ($t(134) = 3.197$, $p = .002$, $d = 0.64$ (Factor 1); $t(134) = 4.841$, $p < .0005$, $d = 0.89$ (Factor 2)).

Discussion
The procedures and processes used to develop and validate the DDI resulted in a psychometrically sound instrument with many potential uses.

First, the DDI could be used as a self-assessment instrument in graduate teacher education and educational administration programs to help candidates become more aware of and develop the dispositions necessary to be effective educators with students from diverse backgrounds.

Next, faculty members could align activities, assignments, and assessments with the dispositions represented in the DDI items. Finally, universities could use the information from the DDI items to collaborate with school districts to develop programs to enhance and improve educators' abilities to work with students from diverse backgrounds.

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