

Teachers' Ability to Identify Divergent Thinking in Their Students

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Introduction

Educators would agree that the primary role of schools is to teach students knowledge in various content areas and processes related to that content. What sometimes is not openly acknowledged is the role of schools in educating students so they can survive well in society. Even with the emphasis in our society on individuality, there are accepted behaviors that the majority of people see as "normal" and necessary for the successful continuation of society. Behaviors outside of the norm are often viewed as abnormal, or at least undesirable. Schools support and reinforce expected, accepted behaviors in their students. Classroom management strategies are based on this premise, but even more subtle is the expectation of "normal" behaviors in the everyday social interactions among students.

Given these expected, accepted behaviors, how do educators view student behavior that may not be considered the norm? While it is natural for teachers to initially guide a student back to those "accepted behaviors," which suggests that something in the student needs to be fixed, is it possible that student behavior that is unusual is simply that...unusual? Unusual or original thoughts and behaviors may be valuable in that, if nurtured constructively, they can result in creative approaches such as unique solutions to problems. The very fact that these behaviors are unusual, or divergent, means they are often misinterpreted as problem behaviors and are treated under the realm of classroom management. While many unusual behaviors are just that (problem behaviors), educators owe it to their students to at least consider the idea that these behaviors may be the result of divergent thinking. For our purposes here, divergent thinking is defined as a thought, behavior, or product that is unusual in that it is different from what a student's peers may think, do, or produce. While a talent may certainly include elements of unusual behavior (i.e., a particular dance interpretation), these kinds of abilities are not the focus of this study.

There has been some acknowledgment of the need for honoring the individuality of thinking at different age levels of students. For example, the Association of Childhood Education International (ACEI) spoke to this issue in a position paper outlining the importance of creative thought in a child's life (Jalongo, 2003). Similarly, in the area of middle school, *Turning Points 2000* (Jackson & Davis, 2000) specifies efforts to "ensure success for every student" regardless of their individual needs and strengths (p. 30). However, most teacher education programs do not emphasize or even recognize the topic of divergent thinking. As a result, teacher candidates are unprepared to identify and address the unique perspectives and behaviors of divergent thinkers. There are examples of educating teacher candidates about other individual differences among future students such as the

emphasis on diversity, whether that diversity focuses on learning styles, socio-economic status, language differences, etc. But the specific topic of divergent thinking is not a part of teacher candidates' preparation, much less how to provide effective instruction in this area.

It is crucial that if we are indeed serious about meeting needs of individual students, along with differing abilities, learning styles, cultural expectations, motivation levels, and numerous other descriptors of individuality, educators must also acknowledge and facilitate the divergent thinking ability some students bring to the classroom. The obvious implication here is that teachers know which students in their classes are divergent thinkers. But do they? They are taught to identify strengths and weaknesses in students' content areas, or even those expected, accepted school behaviors, but can they identify the divergent thinkers? Knowing who they are is, of course, a crucial first step to providing effective instruction for them. Because schools do not often administer tests of creative thinking, identification of students is left to the teachers and their ability to identify these students. The focus of this study was whether teachers could indeed correctly identify those students in their classes who were divergent thinkers. The study included the following three questions:

1. Can early childhood and middle school teachers accurately identify students in their classes who are divergent thinkers?
2. Is a teacher's own level of divergent thinking related to how accurately he or she identifies students' creativity?
3. Are there differences between early childhood and middle school teachers' abilities to accurately identify students who are divergent thinkers?

Participants

Subjects included 127 preschoolers, kindergarteners, and 1st graders; 153 6th, 7th, and 8th graders; and 29 teachers (14 early childhood teachers and 15 middle school teachers). A brief discussion was held with participating teachers on the definition of divergent/creative thinking so that students who displayed musical, artistic, or similar talents were not assumed to be divergent thinkers. The emphasis was on students who tended to think of ideas that their peers did not.

Data

Teachers were asked to rate participating students on a Likert scale of one to five (five being high) indicating how divergent these students were in their thinking, based on the teachers' interactions with students in the classroom. A written reminder of the previously-discussed definition of divergent

thinking appeared at the top of the scale. Teacher ratings were completed first in order to avoid potential interference in their pre-existing concepts of divergent thinking.

After the students were rated, early childhood students were given the test of creative thinking titled Thinking Creatively

in Action and Movement (TCAM; Torrance, 1981) and middle school students were given the Torrance Test of Creative Thinking, Figural Form A (TTCT; Torrance, 1966). All teachers were then given the Abbreviated Torrance Test for Adults (ATTA; Goff & Torrance, 2002). Results from these tests are given in Table 1.

Table 1. Descriptive Information on Student and Teacher Scores

	Minimum	Maximum	Mean	Std. Deviation
Early childhood students (TCAM) n = 127	48.00	154.00	98.98	19.27
Middle school students (TTCT) n = 153	44.00	130.00	105.21	14.94
All teachers (ATTA) n = 29	57	86	71.17	8.94
Early childhood teachers (ATTA) n = 14	59	82	71.43	7.90
Middle school teachers (ATTA) n = 15	57	86	70.37	10.12

Ratings from the Likert scale and scores from the students' standardized Torrance tests produced the accuracy scores. These scores were determined by comparing the teacher's rating of a student on the Likert scale and the student's score on the standardized test that had been converted to a five-point scale. This conversion was accomplished by taking the range of student scores and dividing them into five equal-width intervals and placing scores within those intervals. The

closer a teacher's rating was to the student's score, the better the accuracy score. A teacher rating that was a perfect match to the student score was given an accuracy score of 5, a rating that was 1 point off (e.g., a teacher rating of 3, a student score of 4 or 2) was given a score of 4, with this pattern continuing to an accuracy score of 1, indicating a teacher rating that was 4 off the student score. Teacher ratings and accuracy scores are given in Table 2.

Table 2. Teachers' Ratings and Accuracy Scores

	Minimum	Maximum	Mean	Std. Deviation
All teacher ratings n = 280	1.0	5.0	3.34	.91
Early childhood teachers' ratings n = 127	1.0	5.0	3.4	.86
Middle school teachers' ratings n = 153	1.0	5.0	3.3	.95
Early childhood teachers' accuracy scores n = 127	0.0	4.0	1.12	.89
Middle school teachers' accuracy scores n = 153	0.0	4.0	1.46	.96

Analysis and Findings

To explore the first question of whether early childhood and middle school teachers can accurately identify divergent thinkers, correlations were performed between the teacher ratings and the students' actual test scores, and the teachers'

accuracy scores and the students' actual test scores. Results indicated no significant relationship between the teacher ratings and the student test scores, but a significant inverse relationship ($r_{278} = -.325, p = .000$) between the teacher accuracy scores and the student test scores. No correlation between teacher ratings and student test scores indicates that

it is not the case that, for example, students who scored higher on their tests were also rated higher by their teachers. However, the significant inverse correlation between teachers' accuracy scores and student test scores indicates that teachers' accuracy scores go down as student test scores go up, and the accuracy scores go up as student test scores go down. In other words, a teacher would be more accurate in his/her rating for a student with a lower test score than for a student with a higher test score. These results were true for the separate groups of early childhood participants ($r_{125} = -.261, p = .003$) and middle school participants ($r_{151} = -.220, p = .006$), as well as for the two groups combined.

The second question asked whether a teacher's own level of divergent thinking was related to their accuracy in identifying students who were divergent thinkers. In this case there was no significant correlation between teacher divergent test scores and their accuracy scores. This indicates that a teacher's own level of divergent thinking as indicated on the ATTA is not related to how accurately they identified a student's level of divergent thinking. Again, these results were true for the separate groups of participants and middle school participants, and for the two groups combined.

The third question focused on whether there were any differences in the accuracy scores between the early childhood teachers and the middle school teachers. A t-test was first performed on the ATTA scores of the two groups of teachers to ensure the two groups were similar in their levels of divergent thinking. Results indicated there was no significant difference between the two groups on the ATTA. A t-test was then performed to ascertain whether there were differences in the accuracy scores of the two groups. Results indicated there was no significant difference in how accurately early childhood teachers identified the divergent thinkers in their classes, as compared to middle school teachers.

Discussion

The primary purpose of this study was to determine whether early childhood and middle school teachers could identify students in their classes who were divergent thinkers. It was also of interest to see if those teachers' own level of creative thinking was associated with this ability to identify students or if there were any differences between the two groups of teachers.

No relationships were found 1) between teachers' ratings of their students (indicating how divergent they believed they were) and the students' actual test scores, and 2) between teachers' own divergent test scores and how accurately they identified divergent students. In addition, there were no differences between early childhood and middle school teachers on the accuracy scores that indicated their ability to identify divergent thinkers in their classrooms.

However, it was found that there was a significant inverse correlation between teachers' accuracy scores and the student test scores. This was true whether the early childhood and middle school teachers were examined separately or if the groups were combined. Because the correlation coefficient was negative, it suggests that higher student test scores are

associated with lower accuracy scores on the part of the teacher, and inversely, lower student test scores are associated with higher accuracy scores. The higher the student scored on the standardized test of divergent thinking, the less likely the teacher was to be able to accurately identify that student as a highly divergent student. But the lower the student scored on the exam, the more likely it was the teacher was accurate in his/her identification of the student as a less-divergent student.

Even though a significant inverse correlation was found between student scores and teacher accuracy scores, a fairly small amount of variance was accounted for. However, these findings still suggest two possible explanations that may serve to inform teacher preparation programs as well as drive future research directions. It is possible that teachers are not well versed in the characteristics of divergent thinking and thus are not able to identify those characteristics when present in a highly divergent student. It may be that teachers recognize behaviors that result from divergent thinking to be more in the realm of a behavior problem or at the very least a classroom management issue. Given the fact that teacher preparation programs do not include divergent thinking as a characteristic to be considered when planning and implementing instruction, or even as a general topic, it is not surprising that teachers do not have enough information or expertise to approach highly divergent students in a way that best meets their needs.

The findings may also suggest that students, even those who are younger, exhibit those expected, accepted behaviors in the classroom—those behaviors they have learned are the desirable ones, at least according to the adults in their lives. Those behaviors most probably include some degree of conformity. Students may be behaving within perceived limits even though they may possess high divergent thinking ability as indicated by the standardized test. In this case, teachers cannot identify students who are highly divergent simply because students are not exhibiting their divergent tendencies through the normal course of the school day.

Each of these possible conclusions has its own implications, neither of which should be taken lightly by educators. If it is true that teachers have not received information or practice during their teacher training to adequately identify (or instruct) students who have a unique learner characteristic, in this case divergent thinking, that suggests an omission in teacher education programs. Especially in this era of accountability, any omission in the education of teacher candidates cannot be ignored. If it is the case that divergent students have learned to conform within the confines of school expectations, the implications are different. While operating according to those expected, accepted behaviors (whether in school or in society at large) has advantages for people in their interactions with others, the question becomes whether teachers provide opportunities for their highly divergent thinkers within the confines of the expected behavior.

There is a high likelihood the two conclusions are related. It may be true that since teachers are not trained in the area of divergent thinking, they may actually discourage it. If

divergent thinking behavior is not encouraged or even acknowledged, students may be compliant to the expected, accepted behaviors and choose to suppress their divergent

tendencies. Whatever the cause, the result is the same. We risk losing our solvers of the unique problems of tomorrow by what is mislabeled or suppressed today. ♦

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(From the Editor – continued from page 1)

This issue also features a review of an important work in our field. Scott Peters, who very recently received his Ph.D. from Purdue (congratulations Scott!), has contributed a review of David Lohman's (2006) monograph on the topic of identifying minority students. Scott says he thinks every GT researcher should read the monograph, and I agree; promoting a widespread understanding of the nuts and bolts of how our identification processes work will be vital to the future of our field.

Please be sure to submit your proposals by AERA's new deadline of July 15, now only a few days away!

Finally, please consider submitting a brief report about your current research-in-progress for our fall issue of *Gifted Children*. Reports should be approximately 1,500 to 2,500 words in length, although I'm willing to consider manuscripts of other lengths. I also would be interested in reviews of important new books or other works that are relevant to gifted education. I look forward to receiving submissions by August 31, 2009 via email to michael.matthews@uncc.edu.

Michael S. Matthews, Ph.D.

Editor