

## **Measuring the Middle School Concept: The Status and Effectiveness of Middle School Concept Implementation in Illinois**

This quantitative study examined the implementation of specific middle grades programming practices in relation to participant schools' demographics and academic achievement. A statewide survey of middle grades school principals in Illinois provided data on school-based middle grades practices. Statistical analysis of principal responses, school-level racial/ethnic demographic data, and indicators of relative wealth was completed to determine whether there was a relationship between school-level data and middle grades programming.

### **Significance of this Study to the Field of Middle Level Education**

The middle school concept (MSC) represents specific organizational and programmatic practices designed for the unique needs of young adolescents. National studies have examined implementation levels of various aspects of MSC (McEwin & Greene, 2013), but the role student demographics plays in MSC implementation has not been fully explored. Specific to MSC are key systems of support, including advisory programming, grouping students on interdisciplinary teams, and providing team teachers with common planning time (Flowers & Mertens, 2013; Galassi, Gulledge, & Cox, 1998). Although these supports are designed to meet the emotional needs of young adolescents, there is an underlying purpose of meeting student needs to better enable academic achievement (Russell, 1997).

Although this study only included one state, Illinois is a diverse, populous state with vast differences in school organization across school districts, and the influence of federal policies have already shown a negative effect on some districts' MSC implementation (Scalia, 2011). Demographic patterns of the Illinois public school population are similar to national averages in terms of race, eligibility for federal free and reduced-price lunch (FRL), and per pupil spending, making Illinois a good state to study (Illinois Interactive Report Card, n.d.; Kena et al., 2016; National Center for Education Statistics, 2012). Illinois' diversity yields a broad set of responses that can inform policy conversation and provide insight into overall middle grades programming.

National studies examining academic performance of Highly Successful Middle Schools (McEwin & Greene, 2013) and Schools to Watch schools (Cook, Faulkner, & Kinne, 2009; Falbe, 2014) suggest demographic variables may be important when considering access to quality or "best practice" programming. Additionally, access to MSC practices may be of greater value to less advantaged students in the middle grades context (Shulkind & Foote, 2009). This study contributes significantly to field of middle level education by building on previous survey-based research to explore questions of equitable access to MSC programming as well as whether that programming is effective as measured by academic performance on standardized testing.

### **Research Questions**

The purposes of this study were to identify the rates of implementation of MSC practices in Illinois public middle level schools and consider whether there is a relationship between schools' MSC implementation, school demographics, and school academic achievement. The following questions were explored: (1) What is the current level of MSC implementation in Illinois? (2) Is there a statistically significant relationship between schools' relative wealth and levels of MSC implementation in Illinois' schools? (3) Is there a statistically significant relationship between a school's student racial/ethnic composition, as an aggregate and according to specific racial/ethnic groups, and levels of MSC implementation? (4) Is there a statistically

significant relationship between a school's academic achievement levels, based on state mandated standardized tests, and levels of MSC implementation in Illinois' schools? (5) Is there a statistically significant relationship between a school's academic achievement level, based on state mandated standardized tests and demographics (race/ethnicity, rates of free and reduced-price lunch, or operating expenditure per pupil), when using levels of MSC implementation in Illinois' schools as a mediator variable?

### **Research Design**

This study used survey research methods through administration of a statewide questionnaire to all middle grades principals in Illinois public school districts. The study utilized a single-stage sample of middle grades schools ( $n = 610$ ) in Illinois as determined from public directory data available from the 2015-2016 school year. The questionnaire was developed after extensive review of the literature including two major strands of previous middle grades school survey research (McEwin & Greene, 2013; Valentine, Clark, Hackmann, & Petzko, 2002), and the questionnaire was administered in spring 2016. A total of 149 principals provided useable responses, representing 24.4% of the population.

Independent variables were the individual school percentages of students who qualified for FRL, school district operating expenditure per pupil (OEPP), and individual school percentages of non-White students (utilizing specific racial subgroup category percentages of Asian, African American, Latino/a, and multiracial). An additional variable related to race was considered (called underrepresented minority), which included all students except for White and Asian students. The individual school percentage of students scoring composite 4 or 5 on the 2015 Partnership for Assessment of Readiness for College and Careers test (PARCC) administered to all public middle school students during the spring 2015 was also an independent variable. Dependent variables were the individual school scores of MSC implementation derived from statistical analysis of various teaming and advisory indicators. Determination of the school score included Exploratory Factor Analysis (EFA), which confirmed the use of Teaming and Advisory scores as separate, valid indicators. A Ward's cluster analysis verified through a one-way ANOVA and Welch's robust ANOVA determined the use of four variables of MSC implementation, represented as clusters 1-4 (1 high teaming and high advisory; 2 low or no levels of teaming and high levels of advisory; 3 high levels of teaming and low or no levels of advisory; 4 low or no levels of teaming and low or no levels of advisory).

### **Findings**

Survey response analysis identified rates of Illinois MSC implementation finding teaming existed at some level in 72.4% to 88.6% ( $n = 149$ ) of the respondent schools and at a higher rate than advisory, 51.1% to 54.3% ( $n = 149$ ) depending on which measures were used, which was consistent with national survey research (McEwin & Greene, 2013).

It was anticipated that schools with higher rates of FRL may have lower rates of MSC implementation and school districts with lower OEPP would have lower rates of MSC implementation. To test FRL, a one-way Welch's ANOVA comparing the MSC implementation clusters by FRL rates was conducted, and there was no statistically significant difference among the four groups,  $F(3, 50.95) = 1.27, p = .30$ . To test OEPP, a Welch's ANOVA was conducted comparing the MSC implementation clusters by OEPP, and there was a statistically significant difference among the four groups,  $F(3, 50.77) = 4.86, p = .005$ . Post hoc tests showed Clusters 1 ( $M = \$12,182$ ) and 2 ( $M = \$12,755$ ) were characterized by significantly higher OEPP than

cluster 4 ( $M = \$10,391$ ). This finding indicates schools with lower OEPP are significantly less likely to implement Advisory or Advisory and Teaming than those with higher OEPP.

It was anticipated that schools implementing MSC practices at higher levels may disproportionately represent less racially/ethnically diverse schools. It was anticipated, then, that schools with higher rates of non-White or underrepresented minority groups would have lower rates of MSC implementation. The significant finding from this set of statistical tests was schools high on Advisory implementation (clusters 1 and 2) tended to have larger percentages of Latino/a students within the school; cluster 4 (7.6% Latino/a) had significantly fewer Latino/a students than clusters 1 (19.3 %) and 2 (28.2%). This finding indicates schools with higher percentages of Latino/a students are more likely to have Advisory programming in place. Pairwise comparisons showed no other pairs of means were significantly different between clusters.

To examine relationships between MSC and academic achievement, a two-way ANOVA was completed, to consider the non-additive effects of Advisory and Teaming. That is, Advisory and Teaming were considered separately; the two groups were compared, schools implementing Advisory (Clusters 1 and 2) and schools implementing Teaming (Clusters 1 and 4). The two-way ANOVA considered the interaction effect of Teaming and Advisory implemented together (i.e., whether the two together provided greater effects than simply adding the effects of Teaming and Advisory). This repeated measures ANOVA was conducted to determine whether there was a significant effect of Teaming *or* Advisory and Teaming *and* Advisory on a school's Composite PARCC scores. There was no significant effect of Advisory and no significant interaction of Advisory and Teaming together. Teaming did show a statistically significant main effect on Composite PARCC. The partial Eta Squared of 0.03 indicates 3% of the variance in Composite PARCC is due to Teaming.

As shown above, there was a statistically significant effect of Teaming and academic performance on PARCC testing, and it was necessary to contemplate whether issues of race and relative wealth were significant contributing factors to that outcome. The final research question considered two indicators of a school's race/ethnicity—percentage of non-White students and percentage of underrepresented minority students—and two indicators of relative wealth—FRL and OEPP—along with MSC implementation to think through the effect on academic achievement as measured by one indicator. A series of two-way ANCOVAs were conducted with the Teaming, Advisory, and Teaming by Advisory factors with different combinations of race/ethnicity and relative wealth indicators. Whether percent underrepresented minority or non-White was used as the indicator of race/ethnicity, race/ethnicity had a significant effect on the Composite PARCC scores. Likewise, whether OEPP or FRL was used as the indicator of relative wealth, relative wealth had a significant effect on Composite PARCC scores. Regardless of which combination of race and wealth indicators was used, Teaming was no longer significant. Because the effect of Teaming disappeared in these analyses, the effect of Teaming was actually due to wealth and/or race differences between schools.

### **Conclusions and Implications for Practice**

This study found schools with higher relative wealth have higher access to MSC programming in the area of Advisory, but this finding related directly to school district spending and not students' relative wealth. There was no clear evidence White students were more likely to have access to MSC programming. The only statistically significant finding related to race suggests the opposite in one area of MSC programming, Advisory, and this study was unable to explain why this was the case. There was no overall predictable pattern as to why a school

implements MSC programming other than the district's per pupil expenditures correlating to the implementation of Advisory or Advisory with Teaming. Issues around race may be driving the higher implementation of Advisory in schools with higher rates of Latino/a students, but this finding may relate to previous research associating positive academic outcomes related to affective structures and school connectedness for schools with higher rates of poverty (Picucci et al., 2004; Shulkind & Foote, 2009) given that the Illinois poverty rate for Latinos/as under age 17 is 27% compared to 11% for their White peers (Pew Research Center, 2014).

When considering MSC effectiveness and academic performance, this study found substantial added value to academic performance related to Teaming but no such positive effect related to Advisory. The Teaming finding is consistent with previous research (Cook et al., 2009; Faulkner & Cook, 2013; Flowers et al., 1999). Considering advisory, even though having structures to ensure students are known by the adults in the school promotes better academic results (Picucci et al., 2004) and school connectedness, possibly through advisory, is linked to higher student achievement regardless of socioeconomic factors (Shulkind & Foote, 2009), most studies do not define the purpose and function of advisory as intended to improve academic performance. A standardized test score as the sole indicator of effectiveness of advisory, as applied in this study, is problematic; however, this should not diminish the notion that schools that fully implement MSC (which would include advisory) theoretically would perform higher academically than peer schools. This study did not find a relationship between advisory and academic performance as measured through a single standardized academic score indicator.

The relationship between teaming and academic performance is important, but the strength of this finding was diminished when considering race/ethnicity and relative wealth. Previous research has shown that, when controlling for these variables, the net effect of the school on certain types of academic performance becomes less apparent or non-existent (Falbe, 2014). This finding is significant to the study of academic achievement in relation to MSC. Even though previous research has shown that MSC implementation may result in higher performance in high poverty schools (Picucci et al., 2004), this study suggests race and poverty together have an effect on school academic performance. A school's racial/ethnic demographics and relative wealth may negate the positive effect of MSC implementation, and it is possible that Highly Successful Middle Schools (McEwin & Greene, 2013) may actually be labeled as such because their schools are less non-White and more affluent, leading researchers and practitioners to question the broader application of MSC as a school reform measure.

The findings of this study add to the body of research related to middle grades education and provide a useful look at the current middle grades practices in one state. This study does not provide a definitive answer regarding the effectiveness of middle grades schools but establishes the need for additional research that considers how to improve student academic outcomes while providing equitable access to MSC programming. Based upon the findings from this study the following three recommendations for policy and practice are recommended: (1) When formulating state funding policy, emphasize the broad interest of the state for expanding equitable access to funding because higher resourced school districts implement MSC practices at a greater rate, suggesting that when sufficient funding is available MSC is valued. (2) Continue to invest in teaming. A 3% increase in standardized testing scores related to teaming as part of MSC implementation is of high value to any school. (3) Actively address issues of race/ethnicity and poverty and their effects on improving school performance. In this study, these indicators had a clear effect on negating the statistically significant relationship between MSC implementation and the positive outcomes associated with teaming.

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