Volume 20, No. 2 – Spring 2007

www.mwera.org

MID-WESTERN EDUCATIONAL RESEARCHER

• Official Publication of the Mid-Western Educational Research Association •

On the cover
The Ohio State University—New College, New Vision

The new College of Education and Human Ecology at The Ohio State University was established in July 2007, creating a deep talent pool to solve some of the world's most complex problems. We are building a rigorous, comprehensive, multi-faceted programmed enlivened by a global perspective.

Our combined resources are available to solve societal issues that affect quality of life. With our college's wide range of academic strengths, we have the ability to spark new solutions through research and outreach, and to imagine new possibilities for schools, consumers and communities.

Our visionary, holistic approach, particularly in urban settings, in turn will aid schools in providing outstanding educational experiences. We are leveraging our tradition of embracing diversity and our strengths in teaching, nutrition, early childhood development, family sciences and housing.

Call for Manuscripts

The ***Mid-Western Educational Researcher*** is a scholarly journal that publishes research-based articles addressing a full range of educational issues. The journal also publishes literature reviews, theoretical and methodological discussions that make an original contribution to the research literature, and feature columns. There are four issues of the journal published annually.

The journal is accepting manuscripts for review and possible publication. Manuscripts are submitted to blind reviews by three researchers with knowledge of the literature in the appropriate area. The editors will review the manuscript and make the final decision. The review process requires approximately four months.

Manuscripts are accepted from faculty, students, and professionals working in educational or non-educational settings. Membership in the MWERA is not required in order to submit a manuscript for review. The editors encourage the submission of revised papers that have been presented at the annual meetings of the MWERA, AERA, and other professional organizations.

Manuscripts may be submitted for review electronically. Submit the manuscript to Deborah Bainer Jenkins, Co-Editor, at mer@westga.edu as an email attachment. Indicate in the subject line that this is a MWERJ manuscript. Manuscript should be formatted as a MS Word document using 12 point Times New Roman font. Manuscripts should conform to the style and format described in the *Publication Manual of the American Psychological Association, 5th edition*. All manuscripts should be typed, double-spaced, with 1 ½ inch margins on all sides, and contain page numbers. An abstract of less than 100 words should accompany the manuscript. The author's name, contact information, and affiliation should appear on the title page only. Submissions typically are less than 20 pages in length, including references, title page, and abstract.

All manuscripts will be acknowledged electronically upon receipt. Please note that authors are responsible to submit manuscripts that are free of grammatical and mechanical errors. Manuscripts will be initially screened for format and fit for the journal by the editors. Appropriate manuscripts will be submitted to blind review. The editors reserve the right to make minor modifications in order to produce a more concise and clear article. Contributors acknowledge by virtue of their submission to the journal that they will consent to have their work available internationally through the EBSCO portal, as part of an agreement with the MWERA.

Questions regarding the journal should be directed to the co-editors listed below.

Deborah Bainer Jenkins, Ph.D.
Professor & Interim Chair
University of West Georgia
109 Row Hall
Carrollton, GA 30118
678-839-6181
mer@westga.edu

Adrian Rodgers, Ph.D.
Assistant Professor
The Ohio State University at Newark
1179 University Drive
Newark, OH 43055
740-366-9261
rodgers.50@osu.edu

The *Mid-Western Educational Researcher* (ISSN 1056-3997) is published quarterly
by the MidWestern Educational Research Association through The Ohio State University.
The Summer issue serves as the annual meeting program. Non-profit postage paid at Columbus, Ohio,
with permission of the College of Education and Human Ecology, David Andrews, Dean.
POSTMASTER: Send address change to Jean W. Pierce, Dept. EPCSE, Northern Illinois University, DeKalb, IL 60115.

MID-WESTERN EDUCATIONAL RESEARCHER

Volume 20, Number 2 · Spring 2007 ISSN 1056-3997

MWER Publication Address

Deborah Bainer Jenkins
University of West Georgia
109 Row Hall
Carrollton, GA 30118
Phone: (678) 839-6181
e-mail: mer@westga.edu

MWER Subscription & MWERA Membership Information

Jean W. Pierce
LEPF Department
Northern Illinois University
DeKalb, IL 60115
Phone: (815) 753-8470
Fax: (815) 753-8750
e-mail: jpierce@niu.edu

Secondary Special Education: A Comparative Study of Teachers of "High Incidence Disabilities"

Leah Wasburn-Moses
Miami University (Ohio)
Emily C. Bouck
Purdue University

Abstract

Although state education agencies, teacher preparation institutions, and public schools often combine high incidence disabilities into one category and one placement, the students grouped under this label often have diverse educational needs. This study compares two samples of secondary special education teachers working at the same schools to examine programming across disability category. One sample consists of teachers of students with learning disabilities (LD) and the other, teachers of students with mild mental impairments (MMI). The paper compares the similarities and differences

For decades public schools have used a cross-categorical approach to educating students with "high incidence" disabilities—students labeled learning disabled, mildly mentally impaired, and emotionally impaired. They are often educated together and exposed to similar curricula and instructional methods (Edgar, 1987; Jones, 1996; U.S. Department of Education, 2001). The use of this approach began in the 1970s and 1980s when it was presumed that few educationally relevant differences existed between students with learning disabilities and those with mild mental impairment (Hallahan & Kauffman, 1977). Overlap between these two categories was reported in the areas of characteristics, etiology, outcomes, and relevant educational methodology. Today's groupings in the public schools continue to reflect this ideology (Polloway, Patton, & Smith, 1997).

Polloway, Epstein, Polloway, Patton, and Ball (1986) cautioned that assumptions regarding overlap in these categories may be erroneous. They believed that the similarity between these groups was mainly in the etiologies, as both disabilities had unknown causes and were often attributed to biological or neurological reasons. Later, Polloway, Patton, and Smith (1997) advocated that the curricular needs of non-college bound students with learning disabilities were not different from those of students with mild mental impairment. However, they recognized a need to offer significantly more special services to students with mild mental impairment, because of their need for more support (Polloway et al.).

These grouping practices (i.e., cross-categorical, as opposed to by disability classification) have also been used in teacher education programs to educate preservice special education teachers. Currently, 35 states offer generic licensing in the area of "mild disabilities" (i.e., high incidence disabilities), and 33 offer K-12 certification (Geiger, 2001). These states provide licensure for several categories at once, rather than requiring separate coursework for each disability category (Geiger, 2003). In fact, over 80% of degrees received in special education are now in generic special education, rather than in separate disability categories, such as learning disability or mild mental impairment (Mainzer & Horvath, 2001). Despite the practice, little research exists to illustrate the advantages of the cross-categorical approach to teacher education as opposed to providing certification in specific disabilities (see Nougaret, Scruggs, & Mastropieri, 2005).

If these educational differences between students with mild mental impairment and learning disabilities are in fact true, the field may need to rethink these grouping practices in both K-12 education and preservice programs in institutions of higher education (Patton, Smith, Clark, Polloway, Edgar, & Lee, 1996; Polloway, Epstein, Polloway, Patton, & Ball, 1986). Prospective teachers who are completing generic programs in "mild disabilities" or "high incidence disabilities," may be poorly prepared for their positions and the actual population of students they are to educate. This is particularly salient at the secondary level, where repeated research has shown less focus on this age range (Boudah, Greenwood, & Logan, 2001; Schumaker, Deshler, Bulgren, Davis, Lenz, & Grossen, 2002).

In an age in which both students and teachers are being held to higher standards, and teacher preparation quality is being questioned, research in these areas is crucial (see Branstad, Acosta, Bartlett, Berdine, Butterfield, Chambers, et al., 2002). The field knows very little about service delivery models currently in use in secondary programs regarding teachers' roles within those models or how those roles connect with their teacher preparation (Brandstad et al., Conderman & Katsiyannis, 2002; Kozleski, Mainzers, & Deshler, 2000). This knowledge could enable both the construction and reconstruction of secondary special education programs and personnel preparation programs.

This analysis focused on the overlapping questions that were asked of participants in two surveys sent to secondary

special education teachers at the same schools in one state. It extended individual studies on educational programming that were conducted on teachers of students with learning disabilities and teachers of students with mild mental impairment. The purpose of this investigation was to determine the differences in the work lives between teachers of students with learning disabilities and teachers of students with mild mental impairment. Teacher demographics were compared in order to determine whether any differences found in teachers' work lives might be attributable to other factors, such as number of years teaching. Therefore, this study attempted to answer two questions: (1) Do the personnel characteristics of teachers of students with learning disabilities differ from teachers of students with mild mental impairment?; and (2) Do the work lives of teachers of secondary students with learning disabilities differ from the work lives of teachers of secondary students with mild mental impairment?

Based on the research questions, it was hypothesized that the demographic characteristics of teachers of students with learning disabilities would differ from those of teachers of students with mild mental impairment. For example, it was expected that teachers of students with mild mental impairment would be older, as this disability categorization has been longer in existence. However, it was hypothesized that there would not be differences across the two groups in terms of gender, as most special education teachers are female (Boyer & Mainzer, 2003). Similarly, with respect to the second research question, differences also were expected across the two groups. Specifically, it was expected that teachers of students with learning disabilities would be more likely to teach academic courses, while teachers of students with mild mental impairment would teach more functional or practical courses. It was also expected that both sets of teachers would work primarily in special education settings, as opposed to other instructional environments.

Methods

Participants

A survey was mailed to two separate stratified random samples of 378 teachers in the state of Michigan. One survey was earmarked for teachers primarily of students with learning disabilities (LD), and the other for teachers primarily of students with mild mental impairment (MMI). The sample size is based on a 95% confidence interval with a +/–3% sampling error (Fowler, 2002; Salant & Dillman, 1994).

The 378 teachers were distributed proportionally across the Michigan High School Athletic Association (MHSAA) classification code of school size: A, B, C, and D. Class A represents all high schools with enrollment of 1008 and above, Class B represents all high schools with enrollment between 488 and 1007, Class C represents high schools with enrollment between 243 and 487, and Class D represents high schools with enrollment of 242 and below (MHSAA, 2002). A list of schools in each class was obtained through the Michigan High School Athletic Association School Directory (2002). The list was then screened for schools in each size for eligibility and all non-public and specialty schools were excluded, including Parochial, Charter or Academy schools. Originally 174 schools met eligibility in class A, 162 in both class B and class C, and 95 in class D. To achieve a proportional representation, 111 surveys were mailed to schools in class A, 103 to schools in both class B and C, and 61 to schools in class D. Schools in all four classes who met the eligibility criterion were randomly selected, with each eligible school district having an equal chance of being in the sample.

Procedure

A letter was first mailed to the high school principal in each selected school district for each survey. The letter asked the administrator to distribute the survey to the special education teacher in his or her high school that was the most appropriate individual to respond to questions on secondary special education for students with learning disabilities and mild mental impairment, based on the characteristics as defined in the letter. These characteristics for the MMI survey included: fully certified in special education, taught 3 or more years in the district, and had experience teaching students with mild mental impairment; whereas the characteristics for the LD survey included: fully certified in special education, taught 3 or more years in the district, and had experience teaching students with learning disabilities. Neither survey specified the type of classroom (i.e., self-contained, resource room, inclusive education, cross-categorical, categorical, etc.) in which teachers worked. This letter was to help ensure that the most knowledgeable teacher, in terms of services for the two populations at a school, received the survey and provided the most accurate information. Included in each packet was a letter to the teacher explaining the research survey, the participant informed consent letter, and the survey, in addition to the letter to the administrator explaining the research project.

Two weeks after the mailing of the survey, a postcard reminder was sent to all individuals in the sample. Another mailing was then sent two weeks later to nonresponders. The final follow-up occurred three months after the initial mailing and consisted of either a phone call or an e-mail to the principals of schools who had not returned the survey.

Survey Instruments

This study reports results from two surveys: a survey of teachers of students with learning disabilities (LD survey), and a survey of teachers of students with mild mental impairment (MMI survey), which are available upon request. Both surveys addressed teacher roles and responsibilities and curricula used in secondary settings. Overall, the surveys addressed different topics, but included several identical question in order to analyze similarities and differences between

the populations surveyed. This study reports results of the overlapping questions only.[1]

The LD survey consisted of four components: (1) demographic information, (2) roles and responsibilities, (3) program evaluation, and (4) teacher preparation. The MMI survey was also divided into four sections, including (1) demographic information, (2) curriculum and instructional environments, (3) teacher satisfaction, and (4) teacher preparation and professional development. Both surveys gathered information on teacher demographics, teacher preparation, and the roles secondary special education teachers held in different educational settings.

Both surveys were field-tested. The LD survey was field-tested with ten graduate students who were also special education teachers. Respondents completed the survey independently, marking any questions that were unclear, or identified choices that did not accurately describe their current position. A draft version of the MMI survey was field-tested with ten secondary special education teachers to check clarity of the questions and remove or revise any that were unclear or failed to gather the intended information.

Data Analysis

For the purposes of this study, descriptive statistics (i.e., frequency distributions) were used to describe the frequency of participants' responses to each question. Overlapping school returns from each survey were combined into one SPSS database. Means and frequency distributions were completed on variables representing demographics, teachers' work activities, and teacher preparation. T-tests were also conducted to compare the data between the two surveys and teachers responses in terms their characteristics, their daily school lives, and their preservice preparation.

Results

School & Teacher Demographics

After three follow-ups, the return rate from the LD survey was 191 (50.5%), and the return rate from the MMI survey was 189 (50%). The two surveys had 152 responses in common in that participants work in the same schools, which represented 39% of the entire sample.

Of the 152 schools that returned both surveys, 36.1% were from schools of class size A (over 1007 students), 29.0% from schools of class size B (488-1027 students), 22.6% from schools of class size C (243-487 students), and 12.3% from schools of class size D (fewer than 243 students). Based on teachers' responses to the setting of their school district, most schools were rural (32.2%), followed by suburban (26.2%) and then small town (25.5%). Just over eleven percent of teachers indicated that their school was in an urban setting (11.4%) and 4.7% responded to a mid-size city. The mean number of special education students per school was about 112.

The two samples were quite similar with respect to teacher demographics. About 82% of respondents in both samples were female. On average, teachers had taught about 16 years total, with about nine years in their current position. Respondents in the LD survey were slightly more likely to hold Master's degrees (59.9%) than those in the MMI survey (54.4%), but the difference was not statistically significant.

Teachers' Work Activities

In general, respondents to both surveys reported teaching similar number of academic courses (see Table 1).

Table 1
Teacher Demographics

	LD Survey	MMI Survey
Gender—% Females	82%	82%

Slightly less than half of the courses both group of teachers taught were in the core content subjects (English/language arts, mathematics, science, or social studies). Teachers were most likely to teach English/language arts (21.4% for LD, 17.5% for MMI) followed by about mathematics (12.2% for LD, 12.6% for MMI), then science (7.5% for LD, 9.5% for MMI), and social studies (6.7% for LD, 8.3% for MMI). The two groups of teachers were about equally likely to be teaching more than one subject at a time (about 4.7% for LD and 4.2% for MMI).

Teachers involved in the MMI study were more likely to teach courses that involved practical skills than teachers in the LD study. These differences were statistically significant for electives (3.8% vs. 2.0%, respectively, $t = -1.96$, $p < .05$), vocational education (3.8% vs. 1.7%, $t = -2.92$, $p = .011$), and life skills (4.1% vs. 1.3%, $t = -3.39$, $p < .01$). On the other hand, teachers who responded to the LD survey were more likely to teach courses which were considered "resource" (i.e., providing resource help for students across all classes) or serving as a consultant for other teachers in general education classes. The frequency for resource classes in the LD survey was statistically significantly greater than for the MMI survey (10.5% vs. 7.2%, $t = 2.72$, $p = .01$), as well as for that of consultant (5.4% vs. 3.6%, $t = 2.39$, $p = .017$).

The settings in which the two groups of teachers worked were similar as well. There were no statistically significant differences between the type of instructional environments teachers taught in (see Table 2).

Both sets of teachers worked most often in special education settings. They were equally likely to be teaching content in pull-out settings (38.2% vs. 38.3%), teaching an alternative curriculum in a self-contained pull-out setting (14.9% vs. 14.8%), co-teaching (16% vs. 16%), or teaching in a resource room setting (20.4% vs. 20.5%).

Overall the activities in which both sets of teachers engaged in were also fairly similar, with the exception of adapting/accommodating materials (see Table 3).

Participants in the MMI study were almost twice as likely to adapt or accommodate materials than those involved in the LD study (31.4% vs. 16.7%, respectively). The difference in this activity between the two groups was statistically significant, $t = -7.38$, $p < .001$. Both groups of teachers spent the majority of their time engaged in direct instruction (57% for LD, 56.8% for MMI). Both also spent similar amount of time consulting (4.8% for LD, 4.9% for MMI) and doing paperwork (3.5% for LD, 3.4% for MMI). There was also a statistically significant difference between the groups of teachers involving re-teaching. No teachers from the MMI survey indicated engaging in this role, whereas teachers from the LD survey reported they were doing this activity 14.8% of the time, $t = 10.85$, $p < .001$.

Table 2
*Subjects' Teachers Teach**

Subject	LD survey (Average % of courses) *N* = 152	MMI survey (Average % of courses) *N* = 152
English/language arts	21.4	17.5
math	12.2	12.6
science	7.5	8.6
social studies	7.8	9.5
study/academic skills	6.7	8.3
electives	2.0	3.8
vocational skills	1.7	3.8
life skills	1.3	4.1
social skills	0.2	0.6
resource/study hall	10.5	7.2
teacher consultant	5.4	3.6
more than one subject	4.7	4.2
prep period	15.5	13.3
other	3.1	3.0
Total		

* *Note:* Teachers' responses have been averaged across the

Table 3
*The Roles' of Teachers**

(%) Role	LD Survey (%) *N* = 152	MMI Survey *N* = 152
Alternative curriculum in pull-out setting	14.9	14.9
Content in pull-out setting	38.2	38.3
Resource room	20.4	20.5
Co-teach	16.0	16.0
Other	6.0	10.2
Total		

Table 4
*Teachers' Activities**

(%) Activity	LD Survey (%) *N* = 152	MMI Survey *N* = 152
Direct instruction	57.0	56.8
Adapt/accommodate	16.7	31.4
Ret each	14.8	0
Consult	4.8	4.8
Paperwork	3.5	3.4
Other	3.2	3.1
Total		

Discussion and Implications

Overall four findings were revealed from the comparisons of the two surveys: (1) similar professional characteristics between teachers of students with learning disabilities and teachers of students with mild mental impairment; (2) similar rates of teaching core academic courses, but disparate rates of teaching non-core courses (e.g., life skills and vocational education); (3) similar utilization of service delivery options for educating secondary students; and (4) similar activities across educational settings.

The analysis illustrated that students with different disability categories (learning disabilities and mild mental impairment) were being educated by teachers with similar demographic characteristics (e.g., gender, highest degree held, and years of teaching experience). This finding held despite the disability label of students (e.g., learning disability or mild mental impairment) or the programs into which they were placed (e.g., inclusive education versus pull-out special education classes). These results are not surprising, given current trends in generic licensure (Geiger, Crutchfield, & Mainzer, 2003). Furthermore, the characteristics from both samples of teachers were similar to the SPeNSE study (Carlson, Brauen, Kalein, Schroll, & Willig, 2002), which involved a nationwide sample of teachers to understand issues of teacher preparation and inservice experiences. However, teachers in these studies reported slightly more years of teaching experience (an average of 16) than the SPeNSE (an average of 14 years).

Teachers from both the LD and MMI surveys reported similar percentages of instructing core academic courses. This finding is also consistent with other studies, which reported the majority of secondary special educators' time is spent teaching content courses (Conderman & Katsiyannis, 2002; SPeNSE, 2002). For example, 21.4% of the teachers from the LD survey reported teaching courses in language arts/English, as compared to 17.5% of teachers from the MMI survey. The percentages were very similar for math courses (12.2% for LD, 12.6% for MMI), science (7.4% for LD, 9.5% for MMI%), and social studies (6.7% for LD, 8.3% for MMI). These findings can be considered somewhat surprising given the definition of these two disability categories, the expecta-

tions of their academic limitations, and current belief about their differing needs (Polloway, Patton, & Smith, 1997).

One might expect students with learning disabilities to receive science and social studies in a general education setting, which may be reflected in the low percentage of courses taught by teachers from the LD survey. However, given that mild mental impairment is characterized by academic limitations across the learning spectrum, one might expect these students to receive special education courses in all core academic areas. One hypothesis for this finding is that both students with mild mental impairment and learning disabilities are either receiving science and social studies in the general education classroom or they are not receiving these subjects at all. More research is needed in order to determine whether or where students are receiving instruction in these content areas.

There was clearly a difference in the type of "non-academically orientated" courses teachers taught. Teachers from the LD survey reported more courses in which they were supervising "resource rooms" or study halls. However, teachers from the MMI survey spent more time teaching practical or application skills than teachers from the LD survey (8.5% of the time versus 3.2% of the time), including vocational education, social skills, and life skills. This result seems fairly intuitive given the assumption that students with mild mental impairment, with their broad limitations, would spend more time on functional skills than students with learning disabilities, who may possess academic limitations in only a few areas (Sabornie & deBettencourt, 1997). It is important to note that even the 8.5% figure is quite low, given the attention of researchers to the importance of a functional or life skills approach to curriculum for students with mild mental impairment (Bigge, 1988; Bouck, 2004; Sabornie & deBettencourt). These findings underscore the great need to connect educational placement, instruction and curricula with student outcomes (Branstad et al., 2002; Coleman, 2001), particularly because outcomes for secondary students with mild mental impairment are defined as post-school success (e.g., employment, independent living, and access to community settings and relationships).

Teachers' roles across the two groups were very similar. In fact, teachers of both types of students with disabilities were equally likely to teach alternative content in a pull-out setting, teach in a resource room model, and teach content in a pull-out setting. The stark similarity of the roles of these teachers, aimed to teach different populations, causes one to question where the differentiation lies. If these two populations of students are different, as reflected in the literature, then one could ask why secondary education is not representing these differences in terms of the roles teachers play. Perhaps the current emphasis on standards and academic rigor made differential instruction more difficult. The results of this study revealed that both sets of teachers spent little time on "non-academic" instruction, such as vocational, life, and social skills. Thus, one could ask who is being ill-served at this level.

Most teachers reported that they provided direct instruction to their students (57% of LD and 56.8% of MMI). This finding was supported by other studies reporting the continued prevalence of the content model (Conderman & Katsiyannis, 2002; SPeNSE, 2002). The content model has been called into question with the need for "highly qualified" teachers "who are knowledgeable about the subject area(s) they teach" (Conderman & Katsiyannis). Regardless of the disability label, the results of this study indicate that many teachers are teaching content to students in areas in which they are uncertified, as very few special education teachers are certified in any content areas (SPeNSE). Programmatic changes are being made throughout the country in response to the highly qualified teacher mandate, and as much, the content model in special education may soon be outdated (Brownell, Ross, Colon, & McCallum, 2002). School systems may now feel pressure to find ways to integrate special education students into general education content classes, with the role of the special education teacher even more unclear than before (Kozleski, Mainzer, & Deshler, 2000). However, this transition can open doors for special education teachers to become specialists in one area, which may better serve particular subsets of special education students. The current political climate may reduce the number of teachers being "jack-of-all-trades" as seen in this study; yet the positive or negative implications of this are unclear at this time and actually which populations of students with special needs may benefit or be harmed by this change.

Differences between the two groups did arise when teachers were not providing direct instruction. Teachers from the MMI survey spent almost twice as much time adapting and accommodating materials than teachers from the LD survey. A hypothesis for this finding is that teachers from the MMI survey were teaching the same content in the same setting (e.g., occupying the same roles as teachers from the LD survey), and thus needed to use more adaptation and accommodation to make the material accessible for their students. This conclusion is speculatory and the current research did not address this hypothesis. More research is needed in order to determine connections between teacher roles and responsibilities and student outcomes, particularly with respect to the differences in student characteristics and teacher roles and responsibilities across disability categories.

Limitations and Conclusion

There are several limitations to this study. First, the surveys were a proportional representation of schools of different sizes in one state. Although the conclusions of this research support those of other researchers, generalizability to other states may be limited. Second, this study relied on teacher self-report. Therefore, participants' answers reflected their own views of their work life, especially when responding how often they engage in certain activities and roles. Responses may or may not have accurately reflected how much time they actually spend on a given activity. Third, response rate

is a limitation, in that those who did not return the surveys may have roles and responsibilities that differ substantially from those who did return the survey. The response rate may also be limited by the fact that the surveys were mailed together, so smaller schools are underrepresented in the results, due to the lack of teachers in the smallest schools (i.e., one teacher). Finally, although content validity was established through use of pilot studies, reliability coefficients were not measured for either study.

The main implications of this study pertain to the vast similarities between these two groups of teachers – one serving secondary students with mild mental impairment and the other serving students with learning disabilities – in terms of their daily school lives. Overall, teachers from the LD survey and MMI survey have similar characteristics and are performing similar roles and activities within similar educational settings. However, secondary programs may not be considering the full range of students' needs, including academic, functional, vocational, and social. The similarity of the daily school lives as reported by the two groups of teachers suggests that these two populations of students are receiving similar educational programming – their teachers are engaging in similar activities within similar instructional environments. Thus, what is missing is differentiated instruction, the understanding that these two populations have different educational needs and teacher preparation that reflects these differences.

Future research in this area should include a direct comparison of these teachers and students in their separate environments. What are teachers' exact roles? How are grouping practices determined? What differences in curriculum and instruction are experienced by students with learning disabilities versus students with mild mental impairment? How do their outcomes differ? Given the era of "Highly Qualified Teachers," (see NCLB, 2002), the field of special education must continue to understand teachers' roles, their instructional activities, and their perspectives regarding their profession and the education of the students they serve. Future research should include the voices of secondary special education teachers, reflecting their perspectives regarding the educational practices for these two groups of students and their own work activities to meet the needs of these students and prepare them for post-school.

In conclusion, the striking similarity of the roles and activities between these two groups of teachers can and should raise some concern. These teachers taught distinct groups of students – students with mild mental impairment and students with learning disabilities. These groups are educationally distinct and their teachers' preservice preparation and inservice roles and activities should be tailored to the needs of the students they serve. No longer should special education teacher preparation be a "one size fits all"; students need educational programming that addresses their needs, strengths, challenges, and future life goals.

End Note

[1] Please see Bouck (2004, 2005a, 2005b, 2006) and Wasburn-Moses (2005) for accounts of each survey that were not overlapping (e.g., teacher work activities for each population).

References

Bigge, J. *Curriculum based instruction for special education students.* Mountain View, CA: Mayfield, 1988.

Bouck, E. C. (2006). Service delivery and instructional programming in rural, suburban, and urban secondary special education: An exploratory study. *Rural Special Education Quarterly*, *24*(4), 18-25.

Bouck, E. C. (2005a). Impact of factors on curriculum and instructional environments for secondary students with mild mental retardation. *Education and Training in Developmental Disabilities*, *40*, 309-319.

Bouck, E. C. (2005b). Secondary special educators: Perspectives of preservice preparation and satisfaction. *Teacher Education and Special Education*, *28*, 125-139.

Bouck, E. C. (2004). Exploring secondary special education for mild mental impairment: A program in search of its place. *Remedial and Special Education*, *25*, 367-382.

Boyer, L., & Mainzer, R. (2003). Who's teaching students with disabilities? *Teaching Exceptional Children*, *35*, 8-11.

Branstad, T., Acosta, A., Bartlett, S., Berdine, W., Butterfield, P., Chambers, J., et al. (2002). *A new era: Revitalizing special education for children and their families*. Washington, DC: Department of Education.

Brownell, M. T., Ross, D. D., Colon, E. P., & McCallum, C. L. (2002). Critical features of special education teacher preparation: A comparison with exemplary practices in general teacher education. *Center for Personnel Studies in Special Education.* Retrieved October 7, 2002, from http://www.coe.ufl.edu/copsse/index.htm

Boudah, D. J., Greenwood, C. R., & Logan, K. R. (2001). The research to practice projects: Lessons learned about changing teacher practice. *Teacher Education and Special Education*, *24*, 290-303.

Carlson, E., Brauen, M., Kalein, S., Schroll, K., & Willig, S. W. (2002). *Study of personnel needs in special education: Key findings.* U.S. Department of Education.

Coleman, M. R. (2001). *Conditions of teaching children with exceptional learning needs: The bright futures report* (EDO-EC-01-8). Arlington, VA: ERIC Clearinghouse on Disabilities and Gifted Education.

Conderman, G. J., & Katsiyannis, A. (2002). Instructional issues and practices in secondary special education. *Remedial and Special Education*, *23*, 169-79.

Edgar, E. (1987). Secondary programs in special education: Are many of them justifiable? *Exceptional Children*, *63*, 555-561.

Fowler, F. J. J. (2002). *Survey research methods* (3rd ed.). Thousand Oaks, CA: Sage.

Geiger, B. (2001). *Requirements for conventional licensure of special education teachers*. Little Rock, AR: University of Arkansas at Little Rock.

Geiger, W. L., Crutchfield, M. D., & Mainzer, R. (2003). *The status of licensure of special education teachers in the 21st century* (COPSSE Document No. RS-7E). Gainesville, FL: University of Florida, Center on Personnel Studies in Special Education.

Hallahan, D. P., & Kauffman, J. M. (1977). Labels, categories, behaviors: ED, LD, and EMR reconsidered. *Journal of Special Education, 11*, 129-149.

Jones, C. J. (1996). *An introduction to the nature and needs of students with mild disabilities*. Springfield, IL: Charles C. Thomas.

Kozleski, E., Mainzer, R., & Deshler, D. (2000). *Bright future for exceptional learners: An action agenda to achieve quality conditions for teaching and learning*. Arlington, VA: Council for Exceptional Children.

Mainzer, R., & Horvath, M. (2001). *Issues in preparing and licensing special educators*. Arlington, VA: The Council for Exceptional Children.

Michigan High School Athletic Association. (2003). *Michigan high school athletic association directory*. East Lansing, MI: Author.

No Child Left Behind Act of 2001, Pub. L. No. 107-110, 115 Stat. 1425 (2002).

Nougaret, A. A., Scruggs, T. E., & Mastropieri, M. A. (2005). Does teacher education produce better special education teachers? *Exceptional Children*, *71*, 217-229.

Patton, J. R., Smith, T. E. C., Clark, G. M., Polloway, E. A., Edgar, E., & Lee, S. (1996). Individuals with mild mental retardation: Postsecondary outcomes and implications for educational policy. *Education and Training in Mental Retardation and Developmental Disabilities*, *31*, 75-85.

Polloway, E. A., Epstein, M. H., Polloway, C. H., Patton, J. R., & Ball, D. W. (1986). Corrective reading program: An analysis of effectiveness with learning disabled and mentally retarded students. *Remedial and Special Education, 7*, 41-47.

Polloway, E. A., Patton, J. R., & Smith, T. E. (1997). Mental retardation and learning disabilities: Conceptual and applied issues. *Journal of Learning Disabilities*, *30*, 297-308.

Sabornie, E. J., & deBettencourt, L. U. (1997). *Teaching students with mild disabilities at the secondary level*. Upper Saddle River, NJ: Merrill.

Salant, P., & Dillman, D. A. (1994). *How to conduct your own survey*. New York: John Wiley & Sons.

Schumaker, J. B., Deshler, D. D., Bulgren, J. A., Davis, B. Lenz, B. K., & Grossen, B. (2002). Access of adolescents with disabilities to general education curriculum: Myth or reality? *Focus on Exceptional Children*, *35*, 1-16.

SPeNSE. (2002). *Key findings*. Study of Personnel Needs in Special Education. Retrieved March 31, 2003, from http://www.spense.org

United States Department of Education. (2001). *Twenty-third annual report to Congress on the implementation of the Individuals with Disabilities Education Act*. (US Department of Education Contract Number HS97020021). Jessup, MD: Education Publications Center.

Wasburn-Moses, L. (2005). Secondary learning disabilities teacher roles and responsibilities in an age of reform. *Remedial and Special Education*, *26*, 151-158.

Preservice Teachers' Knowledge of Instructional Scaffolding for Writing Instruction

Sharan A. Gibson
San Diego State University

Abstract

This study reports on an analysis of preservice teachers' dialogue journal entries for evidence of ways in which teachers develop conceptual understanding for writing instruction. Teachers' propositional statements were identified and coded at a specific level for three themes: (1) level of instructional scaffolding, (2) focus of proposed instruction, and (3) hierarchical levels of language. The study identified a set of dilemmas faced by teachers as they developed pedagogical content knowledge for writing instruction, centered on participants' assumptions regarding a direct, causal relationship between the provision of models for effective writing and the improvement of students' expertise for writing.

Learning how to teach writing well is a difficult, current, and consequential area of need. In 2002, only 23% of U.S. fourth grade students scored at a proficient level in writing on the National Assessment of Education Progress (National Center for Educational Statistics, 2002). In spite of (or even due to) current emphases on literacy instruction and the interdependent nature of reading and writing development, preservice teachers often receive only limited instruction in writing theory and pedagogy (Norman & Spencer, 2005). This study investigated preservice teachers' development of conceptual understandings for writing instruction through analysis of the instructional scaffolding, focus of instruction, and hierarchical levels of language that occurred within their propositional statements.

Pedagogical Content Knowledge for Writing Instruction

A substantial body of research informs our understanding of teachers' thinking, planning, and decision-making (Clark & Peterson, 1986). Expert teachers possess richly elaborated knowledge that is specific to particular contexts and classroom events (Carter, 1990). These expert teachers are able to integrate their knowledge of content with effective instructional activities that connect to the prior knowledge and dispositions of their students (Shulman & Quinlan, 1996). Attention is needed, then, to the ways in which teachers become more expert at knowing what to pay attention to within students' thinking, and how to translate pedagogical content knowledge into appropriate tasks for students.

Teachers can have difficulty adequately attending to instruction for both form and function in writing (e.g., Troia & Maddox, 2004). Effective writing instruction, however, addresses multiple aspects of students' competence, including the teaching of skills and strategies and enhancing students' knowledge and motivation (Graham & Harris, 2005). As students become skilled, they learn how to operate effectively across a wide set of hierarchical levels of language and text structure; from the content and style of a writing piece to an accurate use of sentence and paragraph structure, punctuation, spelling, and letter formation. Effective writing instruction requires (1) in-depth understanding of the multifaceted subject matter of writing, (2) learning to think about this content from students' perspectives, and (3) knowing how to represent this content in appropriate and engaging ways (Feiman-Nemser & Parker, 1990).

Instructional scaffolding consists of specific instructional steps taken to help students learn how to complete tasks that would be insurmountable without assistance (Lyons, 2004; Wood, Bruner, & Ross, 1976). Instructional scaffolding is essential to effective teaching based on its capacity to keep each particular task whole while students are learning the various sub skills needed in order to be independently successful (Clark & Graves, 2004). Effective scaffolding for literacy instruction requires a strong interaction between (1) the teacher's knowledge of specific ways in which students need to think and act in order to work effectively, and (2) the changing competencies of individual students from one lesson to the next (Gibson, 2004).

Traditionally, teacher education programs have first taught generic teaching knowledge to preservice teachers and then taught teachers how to apply this knowledge in practical terms. A situative perspective (Greeno, Collins, & Resnick, 1996), however, assumes that activity is an integral part of learning situated within specific physical and social environments. University educators not only provide research-based knowledge, but also create a rich interaction with teachers' own classroom-based and experience-based instructional knowledge (Putnam & Borko, 2000).

For this study, propositional statements within a set of dialogue journal entries written by elementary-level preservice teachers were analyzed in order to investigate teachers' development of the rich, interconnected knowledge base that is required for effective writing instruction. Dialogue journals (a written conversation between students and the course instructor) are often utilized in teacher education programs in order to promote student reflection (Garmon, 2001; Lee, 2004), which in turn is hypothesized to be an important factor in altering teachers' underlying belief systems for teaching (Zeichner & Liston, 1987). Although the body of research

investigating the use of dialogue journals in teacher education programs is relatively limited, studies have documented their general effectiveness (Garmon, 1998).

The dialogue journal entries that were analyzed for this study, however, were explicitly connected to preservice teachers' ability to analyze writing samples and to describe effective writing instruction. Teachers were required to write journal entries that described their evaluation of a series of student-produced writing samples, and to describe needed instruction. The semester-long assignment, then, provided a conversational context situated in teachers' own practice with students, their cooperating teacher's instructional practices, and the subject matter of writing development and instruction for elementary students. All this was integrated with and enriched by the content and activities of the language arts methods course itself.

The intent of this study is to enhance knowledge of preservice teachers' developing expertise for writing instruction. I analyzed teachers' dialogue journal entries for evidence of specific ways in which teachers were developing their conceptual understanding of instructional scaffolding for writing instruction. I posed these questions:

1. What level of instructional scaffolding is described in preservice teachers' propositional statements for writing instruction?
2. To what hierarchical levels of language do preservice teachers' propositional statements for writing instruction refer?
3. Do preservice teachers' propositional statements for writing instruction focus on improvement of a writing product or the writer's skills?

Method

Participants

The participants in this study were the 28 (out of 30) students completing the second semester of a fifth-year, post baccalaureate teaching credential program who agreed to participate in the study. These preservice teachers (28 females and 2 males) completed their university coursework as a stable cohort, and were currently teaching within their second field placement in eight different schools and two school districts in southwestern California. Each participant was enrolled in the second semester of a two-semester methods course in language arts instruction with an emphasis on writing instruction which was taught by the researcher.

The Methods Course Context

The activities for the language arts methods course were based on the belief that learning how to teach is an "inherently complex and messy business" (Wideen, Mayer-Smith, & Moon, 1998, p. 147). A specific set of instructional tools was presented across a continuum of approaches (i.e., writers' workshop, 5-stage processes, conferencing, peer feedback, writer talks, journal writing, guided and shared writing, and interactive writing). Each class session also included opportunities for participants to discuss the pros and cons of each instructional approach (Grossman et al., 2000). Course participants were asked to articulate their current knowledge about writing instruction within every class session through such activities as partner talks, responses to teaching scenarios, quick writes, journal entries, job interview simulation, and response to readings. The choice of these activities was based on the assumptions that (1) articulating their own understandings would cause teachers to construct a more detailed knowledge set, and (2) exposure over time to their peers' thinking would stimulate on-going integration of new pedagogical knowledge and knowledge of students into a more elaborated and effective model of writing instruction.

Dialogue Journal Entries

All 30 students enrolled in the language arts methods course were required to collect and analyze writing samples on a weekly basis throughout the semester from their current student teaching placements, and to write a journal entry for each sample. The journal entries prompted pre-service candidates to describe (a) how this student is responding to writing instruction, and (b) how writing instruction could best help the student. In my role as both researcher and course instructor I responded to each of these entries. Students then responded to my comments and also constructed the next entry based on a new writing sample. Each student maintained the writing samples, their narrative entries, and my comments in a 3-ring binder.

Data Analysis

All 140 of the participants' dialogue journal entries were analyzed using coding and content analysis procedures (Krippendorff, 2004). This process began with identification and transcription of all propositional statements about writing instruction contained within the dialogue journal entries (n = 297), and constituted a purposive sample of the entire set of narrative, journal responses. Each propositional statement was then coded at a specific level within three themes: (1) level of instructional scaffolding, (2) a focus on improving either the writing sample or student expertise, and (3) hierarchical level of language.

First, each propositional statement was coded at a low, medium, or high level of instructional scaffolding. Propositions coded at a low level of instructional scaffolding, for example, included statements that the student should simply be asked to edit their paper, be given greater choice as to topic or more opportunities to write, or asked to use a checklist or rubric during writing. Statements coded at a high level of instructional scaffolding included description of a series of steps, such as teacher modeling or explanation, plus guided practice with a new skill or strategy. Secondly, each proposition was analyzed to determine whether or not it focused explicitly on improving a specific piece of writing or the skill of the writer:

Focus on writing sample:

> Brenda should make a timeline to depict the slice of life she is writing about as well as the main points of the narrative. This would ensure that she includes all moments that are important to tell in this story. (KL/102)

Focus on writer's skill:

> An exercise that might help Arriana would be one where she has to write about one topic in depth. This would help her to focus her attention and get her in the habit of writing for the reader. (SA/208)

Third, each proposition was also coded at one of 13 levels of language use: context, genre, clarity, organization, ideas/topics, fluency, paragraph structure, sentence structure, word choice, spelling, capitalization, punctuation, or letters.

Three additional steps were then taken in order to examine relationships among these three themes, and to confirm or reject emerging findings. First, the relationships between each of the three themes were examined. The set of propositions were re-examined, for example, that exhibited both a high level of instructional scaffolding and an explicit goal to improve the child's writing skill, on a participant-by-participant basis. Secondly, a simulation-of-interviewing procedure (Krippendorff, 2004) was used to reiteratively analyze the study's emerging hypotheses. Four sets of participants' journal entries were chosen randomly. A set of interview-like questions were developed based on tentative, emerging findings (e.g., Do the statements appear to assume a direct, causal link between teacher modeling and improved writing?). These four sets of entries were subjected to multiple re-readings, and their content compared against the questions. This procedure constituted a check for accuracy of the study's findings. Finally, a second researcher also reviewed two participants' complete sets of journal entries, in order to confirm and expand the study's emerging findings. One of these journals contained the least number of propositional statements coded for a high level of instructional scaffolding, and the other contained the most.

Limitations

This study was conducted on a short-term basis, across one semester. The study did not investigate whether or not participants were able to put their descriptions of writing instruction into practice, nor ways in which their pedagogical understandings would have altered based on such practice. It was not the purpose of this study to specify the contexts that were individually responsible for teachers' current understandings of effective instruction. Data for the study focused on participants' dialogue journal entries in order to gain insights into their development of knowledge regarding instructional scaffolding for writing instruction. The intent of the study was not to investigate the effectiveness of dialogue journals in particular as an instructional tool within language arts methods courses. Rather, it was assumed that each individual teacher integrated learning from information and experiences across a set of contexts, including the dialogue journal experience itself as well as the university-level methods courses, student teacher placements, interaction with students and cooperating teachers, and their own school experiences.

Results

Low to Medium Levels of Instructional Scaffolding: Modeling and Opportunities to Practice

Both significant strengths and important weaknesses were evident in preservice teachers' conceptualization of instructional scaffolding for writing instruction. Over half of the propositional statements coded at a low level of instructional scaffolding occurred in the first set of journal entries:

> I also think that teachers need to provide/allow many chances for students to write, as well as give positive feedback. The more a student is allowed to write, the more comfortable, confident, and better the student gets. (DC/141)

Across the semester the percentage of statements coded at a low level for scaffolding declined steadily from 58% to 10%. Beyond the initial set of entries, a medium level of instructional scaffolding was most prevalent:

> Since the content of her story was well developed with a beginning, middle, and end I wouldn't worry too much about her doing much revising. However, I would advise her to do some editing and proofreading of any punctuation or spelling or grammar errors. I would ask her to correct her mistakes and polish up her story by letting other students read it as well as the teacher. (KM/181)

Participants' propositional statements coded at lower levels of scaffolding evidenced their understanding of students' need for exposure to models, as well as for extended and enjoyable opportunities to write. The analysis of these statements, however, also revealed a problematic conceptualization of the relationship between instructional activities and student learning. Teachers appeared to assume a direct, causal relationship between (a) the presentation of models of good writing, student choice for writing, and extended time to write with (b) better writing. Teachers emphasized the importance of models (both teacher modeling of good writing and high quality literature), and the provision of free choice and time to write, to the development of higher levels of student engagement, attention, motivation, and creativity:

- Also, writing should be fun and interesting. Allowing students to pick their own topics and be creative will help them enjoy the process more and continue on to being a better writer. (SK/321)
- Teachers first of all need to be a role model for their students. By giving examples on the board and having dialogue journals will show that teachers can and do enjoy writing. (LD/228)

It is inaccurate to argue, certainly, that these propositions are incorrect in and of themselves. These preservice teachers appeared to assume, however, that these factors would automatically lead to better writing for all students whether or not teachers provided explicit explanation. These statements did not articulate ways of drawing students' attention to crucial aspects of the models provided, or to specific ways to apply these models to their own writing:

> Erin is a second language student, and therefore struggles with adding prepositions and conjunctions to her writing. To help Erin correctly formulate her writing I will do a lot of guided writing activities. By modeling the correct way to write sentences, Erin will gradually change her own writing. (UF/885)

Some students, at least, will be in need of explicit discussion of the purposes and intended application of modeling (Glasswell, Parr, & McNaughton, 2003).

Hierarchical Levels of Language: Understanding Writing as a Cognitive and Language-Based Skill

As teachers described their recommendations and propositions for writing instruction, they consistently addressed both higher (i.e., ideas, topics, genre, clarity, organization) and lower (i.e., punctuation, spelling, and capitalization) levels of language use. These preservice teachers did not demonstrate an overriding concern for the mechanics of writing over aspects associated with writers' voice, purposes, or intended message at any point within the semester. This finding was consistent across low, medium, and high levels of instructional scaffolding.

Analysis of propositions across hierarchical levels indicated both strengths and weaknesses in participants' conceptualization of instructional scaffolding for writing instruction. Within the hierarchical level of organization, for example, participants' propositional statements reflected low to high levels of instructional scaffolding:

Low Scaffolding

> Writing in and out of class will get children used to putting their thoughts down on paper in an organized fashion. (HW/101)

High Scaffolding

> Guided writing will be a great way for Jimmy, to teach him how to organize his thoughts with a web. Next, he could write a sentence about each thought. It would be a good idea if the teacher models the web method so he understands what is expected. (RN/221)

Similarly, participants' propositions also reflected low to high levels of scaffolding for statements about spelling:

Low Scaffolding

> He could be reminded about the little rule that says "I before E." Because he wrote quieitly instead of quietly. (KM/143)

High Scaffolding

> In order to help Dan with /th/ the teacher could post the letters on a poster and show pictures representing words that have the sound. She could focus on the mouth to display the sound it makes, and the poster should be placed where he can easily refer to it. The teacher would give a minilesson on the poster and also talk about other words with /th/. (RS/408)

Teachers frequently identified a specific goal, however, without reference to a broader set of cognitive, language-based proficiencies. The statements of these preservice teachers, for example, demonstrated that they valued writing practice. Teachers emphasized the need for opportunities to write continuous text with high levels of engagement, for extended periods of time, everyday:

- In my kindergarten classroom, there are students who would continue to write if time allowed during independent writing time. There does not seem to be enough time for them to write and I believe their writing skills would only get better faster if they were allowed more time to do so. (LC/431)
- Teachers should give the students opportunities to write about something that interests them. Their writing should be consistent and continuous, meaning they should practice for a certain amount of time every day. (KB/313)

Teachers did not extend this concept, however, to students' development of cognitive and language-based skills in support of fluent writing. Where writing is conceptualized as putting thinking down on paper, then fluency can be defined as the ability to produce many ideas quickly and with ease (Fearn & Farnan, 2001). Fluent writers are able to conceptualize, organize, and communicate a set of important and interesting ideas quickly and in volume. In this study, preservice teachers did not describe instruction focused explicitly on teaching students how to both think and write fluently.

High Levels of Instructional Scaffolding: Teaching Students How to Write

The propositional statements in this study also contained intermittent evidence, however, of a stronger model of writing instruction. These statements occurred along two dimensions: (a) writing instruction focused on the expertise of students, and (b) high levels of instructional scaffolding. Earlier in the semester and associated with low levels of instructional scaffolding, participants typically focused their instruction on the improvement of a particular piece of writing:

> He could benefit from reading his story out loud to someone. He might realize that a part of it does not make sense at the beginning.

Very few propositional statements were coded both high in instructional scaffolding and focused on improving a specific piece of writing (rather than the writer's skill). Statements with low and medium levels of instructional scaffolding,

however, were relatively evenly divided between a focus on student expertise or improvement of a specific writing sample.

Most teachers demonstrated stronger pedagogical reasoning at points within the journal entries, however, working on transforming their content knowledge into pedagogically powerful forms that were adaptive to students' current strengths and needs. More than two thirds of the teachers constructed propositional statements (typically in the second half of the semester) that described an explicit connection between recommended instruction and the development of student expertise. These entries identified instruction that would (a) build on students' prior knowledge, and (b) support the author's purpose or intended message:

> After reflecting on this writing sample, I see how important it is for a teacher to check in with his/her students during the writing process. This will give the teacher a more informed response to a student's writing because she/he will know what the student was attempting to write and then can plan for instruction. (KJ/575)

Teachers also described instruction designed to support students' increased quality of attention to specific aspects of writing tasks; becoming consciously and strategically aware of their own thinking and organizing processes for writing:

> Clarence could improve his character development by doing some kind of pre-writing planning. He could make a chart, for example, of the different characters in his story. By organizing thoughts like this on paper first Clarence would be able to see where his story is headed and what kinds of character development will take place. (DH/903)

Across all participants, when preservice teachers described instruction that included a high level of scaffolding they described students' behavior as multifaceted and active:

> Another thing I noticed about Kelsey's writing is his overuse of apostrophes. He wrote 'he will get ecsited when he see's ethr dog's he even get's ecsited when he see's sum one.' Apparently Kelsey enjoys using apostrophes, but he is obviously using them incorrectly. Perhaps he would benefit from a few lessons that remind the students of the correct ways in which to use apostrophes. The teacher could display the rules for using apostrophes along with example sentences that include the use of apostrophes. The teacher could use the overhead projector to display sentences that have not yet incorporated the use of apostrophes, and let the students come up and add apostrophes where they think they should be included while explaining their reasoning behind their thoughts. (KM/372)

Later in the semester, however, preservice teachers were more likely to have described an instructional activity that focused both on students' learning and high levels of instructional scaffolding:

> One strategy that I think might help Diana would be to use a concept map type of graphic organizer. She can put her topic sentence in the main bubble and then add some supporting detail sentences that all connect to her topic sentence. These sentences will become the details in her paragraph that support her topic sentence. Once she starts to use these graphic organizers she will have a better way to organize her thoughts. Eventually she will be able to write complex paragraphs with supporting details that all relate back to the topic sentence. (MF/545)

In summary, teachers' propositions included all three levels of instructional scaffolding, with an emphasis later in the semester on high levels of instructional scaffolding in integration with a focus on improving the writer's skills. Teachers' propositions presented a problematic assumption that the provision of modeling and opportunities to write would automatically cause improved student performance. Participants consistently addressed high to low levels of hierarchical language use, both across the semester and across all levels of instructional scaffolding. Teachers also, however, typically described instruction without emphasizing writing skill as a cognitive, language-based proficiency. For example, teachers did not appear to connect fluent transcription to fluent thinking.

Discussion

This study presents evidence that preservice teachers are able to describe effective writing instruction that begins to integrate (1) subject-specific aspects of writing skill with (2) more elaborated pedagogical knowledge and knowledge of their students' prior knowledge and interests. The teachers in this study demonstrated significant strengths in attention to writing skills across hierarchical levels of language, modeling, and opportunities to write for extended periods of time on self-chosen topics and ideas of interest. Participants' statements demonstrated concern for students' use of both high and low levels of language use across all levels of instructional scaffolding, from spelling to the communication of ideas. In the second half of the semester, participants began to describe instruction that would (a) build on students' prior knowledge, (b) support the author's purpose or intended message, and (c) increase students' quality of attention to specific aspects of writing tasks. Teachers did more than describe opportunities for students; they described instruction that would be more likely to teach students *how* to write.

These preservice teachers also encountered significant areas of difficulty, however. It is appropriate and necessary for teacher educators to develop the knowledge and skill needed to identify predictable dilemmas faced by preservice teachers, as well as ways of helping teachers negotiate their own responses to these dilemmas (Grossman et al., 2000). The results of this study should remind teacher educators of the absolute importance of attention to teachers' thinking.

Specifically, this study identified a specific set of predictable dilemmas that are likely to cause interference with teachers' acquisition of a set of effective instructional practices for writing instruction. Preservice teachers may:

1. Assume a direct, causal relationship between modeling, student choice, and extended time to write to improvement in student writing;
2. Underestimate students' need for detailed and specific levels of instructional scaffolding, including an explicit intention to show students how to use new learning independently;
3. Neglect the cognitive, language-based aspects of writing skill; and/or
4. Experience confusion regarding the relationship between fluent thinking and fluent transcription.

For each of the challenges listed above, teacher educators face a corresponding dilemma. For example, the tendency of preservice teachers to refer explicitly to both high and low levels of language use may mask the need for explicit discussions of the relationships between student development in cognition and writing. Because the act of writing that is most easily observed is transcription, the roles that thinking and language use play in fluent, skilled writing may need to take center stage in teacher education courses. Similarly, teacher educators need to identify ways to continue a strong emphasis on instructional modeling of effective writing processes and texts, while also drawing teachers' attention in powerful ways to the difficulties many students will encounter when required to move from "Point A" (i.e., modeled writing) directly to "Point B" (i.e., independent writing).

Further research is needed to investigate the ways in which preservice teachers are able to expand on their written description of effective writing instruction when interviewed and through analysis of the content of class discussions. It would also be useful to investigate the degree to which preservice teachers are able to implement effective types of scaffolding for writing lessons, and to interview teachers regarding their decision-making as they plan and implement lessons. It is essential for teacher educators to continue to sensitize ourselves through such research to the types of dilemmas encountered by preservice teachers as they learn to teach writing effectively by engaging in on-going cycles of research and course reform, and learning how to listen to the thinking of the teachers we educate.

References

Carter, K. (1990). Teachers' knowledge and learning to teach. In W. R. Houston (Ed.), *Handbook of research on teacher education* (pp. 291-310). New York: Macmillan.

Clark, K. F., & Graves, M. F. (2004). Scaffolding students' comprehension of text. *The Reading Teacher*, *58*(6), 570-580.

Clark, C. M., & Peterson, P. L. (1986). Teachers' thought processes. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (pp. 255-296). New York: Macmillan.

Fearn, L., & Farnan, N. (2001). *Interactions: Teaching writing and the language arts*. New York: Houghton Mifflin.

Feiman-Nemser, S., & Parker, M. B. (1990). Making subject matter part of the conversation in learning to teach. *Journal of Teacher Education, 41*(3), 32-44.

Garmon, M. A. (1998). Using dialogue journals to promote student learning in a multicultural teacher education course. *Remedial & Special Education, 19*(1), 32-46.

Garmon, M. A. (2001). The benefits of dialogue journals: What prospective teachers say. *Teacher Education Quarterly, 28*(4), 37-50.

Gibson, S. A. (2004). Scaffolding word solving. In A. Rodgers & E. M. Rodgers (Eds.), *Scaffolding literacy instruction. Strategies for K-4 classrooms* (pp. 105-120). Portsmouth, NH: Heinemann.

Glasswell, K., Parr, J. M., McNaughton, S. (2003). Working with William: Teaching, learning, and the joint construction of a struggling writer. *The Reading Teacher, 56*(5), 494-500.

Graham, S., & Harris, K. R. (2005). Improving the writing performance of young struggling writers: Theoretical and programmatic research from the Center on Accelerating Student Learning. *The Journal of Special Education, 39*(1), 19-33.

Greeno, J. G., Collins, A. M., & Resnick, L. B. (1996). Cognition and learning. In D. Berliner & R. Calfee (Eds.), *Handbook of educational psychology* (pp. 15–46). New York: Macmillan.

Grossman, P. L., Valencia, S. W., Evans, K., Thompson, C., Martin, S., & Place, N. (2000). Transitions into teaching: Learning to teach writing in teacher education and beyond. *Journal of Literacy Research, 32*(4), 631-662.

Krippendorff, K. (2004). *Content analysis. An introduction to its methodology*. Thousand Oaks, CA: Sage.

Lee, I. (2004). Using dialogue journals as a multi-purpose tool for preservice teacher preparation: How effective is it? *Teacher Education Quarterly, 31*(3), 73-97.

Lyons, C. A. (2004). Foreword. In Rodgers, A., & Rodgers, E. M. (Eds.), *Scaffolding literacy instruction. Strategies for K-4 classrooms* (pp. ix-xi). Portsmouth, NH: Heinemann.

National Center for Educational Statistics (2002). NAEP writing results. Retrieved July 23 2005, from http://www.nces.ed.gov/nationsreportcard/writing/results2002.

Norman, K. A., & Spencer, B. H. (2005). Our lives as writers: Examining preservice teachers' experiences and beliefs about the nature of writing and writing instruction. *Teacher Education Quarterly, 32*(1), 25-39.

Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher*, 29(1), 4-15.

Shulman, L. S., & Quinlan, K. M. (1996). The comparative psychology of school subjects. In D. C. Berliner & R. C. Calfee (Eds.), *Handbook of educational psychology* (pp. 399-402). New York: Simon & Schuster Macmillan.

Troia, G. A., & Maddox, M. E. (2004). Writing instruction in middle schools: General and special education teachers share their views and voice their concerns. *Exceptionality, 12*(1), 19-37.

Wideen, M., Mayer-Smith, J. M., & Moon, B. (1998). A critical analysis of the research on learning to teach: Making the case for an ecological perspective on inquiry. *Review of Educational Research, 68*(2), 130-178.

Wood, D. J., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem-solving. *Journal of Child Psychology and Psychiatry, 17*, 89-100.

Zeichner, K., & Liston, D. P. (1987). Teaching student teachers to reflect. *Harvard Educational Review, 57*(1), 23-48.

Call for Manuscripts

The ***Mid-Western Educational Researcher*** is a scholarly journal that publishes research-based articles addressing a full range of educational issues. The journal also publishes literature reviews, theoretical and methodological discussions that make an original contribution to the research literature, and feature columns. There are four issues of the journal published annually.

The journal is accepting manuscripts for review and possible publication. Manuscripts are submitted to blind reviews by three researchers with knowledge of the literature in the appropriate area. The editors will review the manuscript and make the final decision. The review process requires approximately four months.

Manuscripts are accepted from faculty, students, and professionals working in educational or non-educational settings. Membership in the MWERA is not required in order to submit a manuscript for review. The editors encourage the submission of revised papers that have been presented at the annual meetings of the MWERA, AERA, and other professional organizations.

Manuscripts may be submitted for review electronically. Submit the manuscript to Deborah Bainer Jenkins, Co-Editor, at mer@westga.edu as an email attachment. Indicate in the subject line that this is a MWERJ manuscript. Manuscript should be formatted as a MS Word document using 12 point Times New Roman font. Manuscripts should conform to the style and format described in the *Publication Manual of the American Psychological Association, 5th edition*. All manuscripts should be typed, double-spaced, with 1 ½ inch margins on all sides, and contain page numbers. An abstract of less than 100 words should accompany the manuscript. The author's name, contact information, and affiliation should appear on the title page only. Submissions typically are less than 20 pages in length, including references, title page, and abstract.

All manuscripts will be acknowledged electronically upon receipt. Please note that authors are responsible to submit manuscripts that are free of grammatical and mechanical errors. Manuscripts will be initially screened for format and fit for the journal by the editors. Appropriate manuscripts will be submitted to blind review. The editors reserve the right to make minor modifications in order to produce a more concise and clear article. Contributors acknowledge by virtue of their submission to the journal that they will consent to have their work available internationally through the EBSCO portal, as per agreement with the MWERA.

Questions regarding the journal should be directed to the co-editors listed below.

Deborah Bainer Jenkins, Ph.D.
Professor & Interim Chair
University of West Georgia
109 Row Hall
Carrollton, GA 30118
678-839-6181
mer@westga.edu

Adrian Rodgers, Ph.D.
Assistant Professor
The Ohio State University at Newark
1179 University Drive
Newark, OH 43055
740-366-9261
rodgers.50@osu.edu

Efforts Toward National Educational Reform: An Essentialist Political Agenda

Thomas A. Kessinger
Xavier University

Abstract

The purpose of this manuscript is to summarize the major provisions of four salient national government initiatives and relate each one to an "essentialist" political agenda that is based on the essentialist philosophy or theory of education. The National Assessment of Educational Progress, A Nation at Risk, America 2000/Goals 2000, and No Child Left Behind Act of 2001 are reviewed to denote a trend that projects the national government as a dominant player in public educational reform. Evidence is offered, by way of primary source documents, to establish a link between the four aforementioned actions and the essentialist way of thinking. Readers should note that although education is traditionally and primarily a function of the states by way of the 10th Amendment to the U.S. Constitution, the national government exerts significant influence in deciding what should constitute that "education" for school-age children in the U.S. today. Furthermore, most states are following the national government's lead in advocating educational reform.

Introduction

This exploratory paper attempts to summarize the key provisions of four important initiatives or actions of the legislative and executive branches of the national government of the United States. The initiatives have roots in four decades of philosophy and are represented in The National Assessment of Educational Progress (NAEP*), A Nation at Risk*, *America 2000*/*Goals 2000*, and the *No Child Left Behind* Act of 2001. Although Pre-K through 12 public education is primarily a matter of state interest, responsibility, and control, the national government has embarked on a steady and continuous path toward approximating, reflecting, and articulating an essentialist philosophical or educational orientation (Dunn, 2005; Knight, 1998; Ornstein & Levine, 2006). As a result of its efforts, the national government is steadily exercising, or perhaps gaining, greater control of public education in the United States.

Viewed and stated another way, the purpose of the paper is to: (1) summarize the four initiatives, and (2) relate each action to the philosophical perspective or educational theory of essentialism. A review of primary and other source documents are included in this paper to establish the revolutionary emphasis placed on public education by the national government. This topic is timely and of significant interest to academics and policymakers—state *and* national—who are trying to effect greater educational improvements in our nation's public schools.

Throughout the twentieth century, as progressive ideas made their way into schools, various groups reacted. In the 1930s, one major group, the essentialists--as well as some others--argued that progressive educational ways were too soft and had placed less emphasis on dealing with the so-called educational basics such as mastery of the three R's and established facts (Knight, 1998, p. 113; Webb, Mehta & Jordan, 2003, pp. 101-102). Essentialism is an educational theory grounded in both idealism and realism; and, according to Ornstein and Levine (2006), its overarching aim is "to educate the useful and competent person" (p. 113). Its content emphasis includes "the three Rs, liberal arts and science, academic disciplines, and academic excellence" (p. 426). The essentialist tradition contains a large number of concerned citizens who feel that the schools have declined and that they need to return to stricter discipline and to a study of the "basics." Since the 1930s, the essentialists have advanced efforts to warn the American public of "life-adjustment education," child-centered education, and the continuing erosion of education or learning in the United States (Webb, Mehta & Jordan, 2003, p. 101).

In the 1950s, essentialists returned in force and again exerted anti-progressive sentiments via the Council for Basic Education under the leadership of Arthur Bestor and others. Bestor had written *The Retreat from Learning in Our Public Schools*, and this work was truly an essentialist manifesto. Assisting Bestor in the attack on progressive ideas in public schools was Admiral Hyman G. Rickover who deplored the lack of developed minds in the United States. He favored a European-type of education that focused on the basics and would lead students to be better prepared to enter an intensive and rigorous professional or technological program of study. Of course, the launching of Sputnik I added fuel and force to the debate of essentialist versus progressive ways of thinking.

The telling or watershed event that brought the national government directly and openly into the present discussion on public education was the issuance of *A Nation at Risk* (1983). This seminal government report noted that the "Federal Government has *the primary responsibility* to identify the national interest in education" (p. 33). As many can recall, the report warned "the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people" (p. 5). Essentialists believe the essentials or "core" of education should be the "basics" of education. This report

highlighted both higher standards and improved content. It called for *renewed* emphasis (that is, a *neo-essentialist* perspective) on the "Five New Basics" which would include as a minimum standard for high school graduation four years of English; three years each of mathematics, science and social studies; and one-half year of computer science. Two years of a foreign language for college-bound students (p. 24) is also recommended. Webb, Mehta, and Jordan (2003) define essentialism as a "theory that focuses on an essential set of learnings that prepare individuals for life by concentration on the cultural and traditions of the past" (p. 530). According to Ornstein and Levine (2006), the *neo-essentialist* movement began in the 1980s, and advocates of this position are often associated with "political and cultural conservatives" (p. 123). Consequently, neo-essentialism can be defined as essentialism with a political thrust.

Even before *A Nation at Risk* (1983) was issued by President Reagan, the U.S. Congress had mandated the use of national tests by establishing the National Assessment Governing Board that set-up the National Assessment of Educational Progress (NAEP) in the late 1960s. It is noteworthy that the NAEP continues as "the only nationally, representative, continuing assessment of what America's students know and can do in school" (refer to the Overview of NAEP 2004). Epstein (2005) offers an extended discussion on the genesis and evolution of the NAEP.

As noted in the *Digest for Educational Statistics* (2004), "NAEP long-term assessments are designed to inform the nation of changes in the basic achievement of America's youth" (p. 527). The NAEP provides four major dimensions of data: (a) state and national student performance results in reading, mathematics, science and writing, (b) trends in national student performance in reading, mathematics, and sciences for the past thirty years, (c) national student performance results in US history, geography, civics, the arts, foreign language, world history, and economics (beginning in 2006), and (d) comparisons in student performance based on such factors as race/ethnicity, gender, public and private schools, level of parental education, prior course-taking, and classroom and school conditions and practices (Overview of NAEP 2004). For example, according to Ornstein and Levine (2006), "mathematics and reading proficiency scores of groups of students vary directly with their social class" (p. 321). NAEP data reflects, "students with well-educated parents (one primary measure of social class) score much higher than students whose parents have less education" (p. 321).

Furthermore, the NAEP provides a variety of publications and other information tools in varied formats. These include: national and state reports cards on student performance; sample questions from tests, sample student answers, and scoring guides; assessment subject-area frameworks; and an online data tool that allows users to analyze and download data from NAEP assessments. Finally, NAEP publishes a schedule of regular test dates (by year, type of assessment, and subject area or discipline).

The 1980s and 1990s witnessed a revival of basic education by political conservatives, and the new or *neo-essentialist* movement developed. The neo-essentialists offered a critique of existing schools and proposed a program to remedy perceived deficiencies in the educational system. They contended that new and sometimes experimental approaches to teaching had resulted in a neglect of systematic direct instruction in basic skills or reading, writing, and computation; this also reflected a decline of literacy and computational standards. For example, social promotion policies had eroded academic standards.

Stimulated by *A Nation at Risk* (1983), a national standards movement developed. The *essential* theme of movement is that American education will be improved by creating high academic standards for students' achievement and by measuring progress toward achievement by means of standardized tests. *A Nation at Risk* effectively continued the earlier NAEP emphasis on testing.

Since the advent of NAEP and *A Nation at Risk*, other national actions affecting education occurred. For example, then President G.H.W. Bush endorsed the agenda of the nation's governors in supporting *America 2000*, and later President W.J. (Bill) Clinton expanded it to *Goals 2000* (*Educate America Act, 1994*). Both presidential initiatives attempted to address particular weaknesses in the public schools by focusing on national targets that would be attained by the end of the decade. According to Marshall and Gerstl-Pepin (2005), "[a] national focus on standards originally came to fruition via the National Governors Association, which advocated for America 2000 and Goals 2000, [and] national-level policies that emphasized the need for national standards" (p. 182).

According to Urban and Wagoner (2004), then President George H.W. Bush had much in common with the nation's governors in the late 1980s and early 1990s.

> This commonality was reflected in the joint adoption by the president and the governors of an educational platform for the nation. As the outcome of the 'Presidential Summit on Education,'…the *America 2000* program was pushed vigorously by the Bush administration. It consisted of a series of goals, published in pamphlet form, which the political leaders had agreed constituted a needed educational agenda for the nation. (p. 361)

The thrust of *America 2000* (1991) essentially reiterated several earlier educational pronouncements: "the schools were in need of a revolution, school people would have to be held accountable for their results, the schools were destined to become learning communities, and students within them should prepare for 'lifelong learning'" (pp. 8 and 13). Hirsch (1996, p. 258) also offers a discussion of "lifelong learning" from an essentialist perspective.

The *America 2000* pamphlet also echoed notions found earlier in *A Nation at Risk* (1983) regarding international competitiveness. The focus of *America 2000* program was found in its six educational goals:

1. All children in America will start school ready to learn.
2. The high school graduation rate will increase to at least 90 percent.
3. American students will leave grades 4, 8, and 12 having demonstrated competency in challenging subject matter including English, mathematics, science, history, and geography; and every school in America will ensure that all students learn to use their minds well, so that they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.
4. U.S. students will be the first in the world in science and math achievement.
5. Every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and to exercise the rights and responsibilities of citizenship.
6. Every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning. (*America 2000*, p. 19)

Recalling the general aim of essentialism to educate "the useful and competent person," there are clearly stated essentialist notions in the above goals. For example, the graduation rate will increase, students will exude competency in selected subjects and will excel in math and science, and students will use their minds well to become more responsible citizens and able to compete in the international arena. Inherent in each of the six goals is an increase in standards; this is at the heart of essentialism.

According to Urban and Wagoner (2004), President Clinton in his *Goals 2000* added two notions to Bush's six national goals: namely, "parental involvement in education…and programs for improving the professional education of teachers" (p. 363).

In 1994, the U.S. Congress passed the *Goals 2000: Educate America Act* consisting of the eight aforementioned goals and published them as The National Education Goals. Kasper (2005) notes that with this act "an educational standards-based school reform concept achieved acceptance at the national level" (p. 175). The target or objective of the goals was an educated citizenry, well trained and responsible, capable of adapting to a changing world, knowledgeable of its cultural heritage and the world community, and willing to accept and maintain America's leadership in the twenty-first century" (Ornstein & Levine, 2006, pp. 408-409).

According to Ornstein and Levine (2006), in 2001 the National Education Goals Panel made its final and major report on the progress of the eight goals. The panel noted that although the nation did not meet the national goals by 2000, "many states made remarkable progress" (p. 409). In 2002, the panel was suspended after *No Child Left Behind* was signed into law by President George W. Bush.

Finally, the recent legislation of *No Child Left Behind* (2001) has continued the impetus for reform by the national government. Secretary of Education Paige (2002) stated "[t]he No Child Left Behind law heralds a major change in direction for American schools" and "…helps us look at schools, governance, and the federal role in education in the right way" (p. 710). In spite of the ongoing debate on the merits and demerits of this legislative enactment, the national government has increased its requirements on the states and therefore has continued its role as a major influence on public education policies. As a result of this law, states are obligated to increase standards, insure achievement by means of tests, expect higher qualified teachers, and give evidence of greater accountability through annual yearly progress reports. These obligations are essentialist in design. In other words, states are the major conduits through which this national essentialist agenda is effected.

Specifically, a legal endorsement of standards came with the enactment of *No Child Left Behind*. Its major features reinforce an essentialist or basic education approach to education. It identifies the key basics as reading and mathematics. The act is also based on the essentialist premise found in the standards movement that students' academic achievement can be measured by standardized tests. Because essentialism is grounded in idealist and realist philosophy, tests are held to be a valid and reliable means of evaluating students' performance and achievement. Pulliam and Van Patten (2003) explain both essay and objectives examinations are encouraged (pp. 32-26).

Especially in the 1980s and 1990s, the national government sought to reduce monetary outlays and shift program fiscal responsibility to state and local governments. With *No Child Left Behind*, more federal influence is in evidence. Accountability pressures at both the state and local levels have school officials focused on improved test scores in reading and mathematics and on ensuring that every child has a "highly qualified teacher" in the classroom.

Conclusion

The intent of this paper is to demonstrate the significant role played by the national government or its agencies in advancing an "essentialist" educational agenda since the late 1960s. Evidence was offered by way of primary and other source documents to underscore an essentialist way of thinking. This paper should enable the reader to see connections between the four initiatives highlighted and the essentialist movement in education. Readers should also note that although education is primarily a function of the states by way of the Tenth Amendment to the U.S. Constitution, the national government has become a major player in deciding what should constitute "the education" or the content and process for school–age children in the United States today.

The success of the national government-led essentialist position is manifest by the number of states that have set higher standards, strengthened graduation requirements, mandated curricula, and increased testing for both students and teachers—especially since *A Nation at Risk* (1983). Still there are educational historians and policymakers who would

(Continued on page 23)

The Mid-Western Educational Research Association's

Annual Meeting

October 24–27, 2007

Sheraton Westport Chalet Hotel
St. Louis, MO

Standards in Conducting and Publishing Research in Education

The 2007 Annual Meeting of the Mid-Western Educational Research Association will be held in St. Louis, MO, with an exciting program of invited speakers, focused workshops, and peer-reviewed papers presented in a variety of session formats. We will kick off the program with our traditional Fireside Chat with **Dr. Patricia B. Elmore**, Interim Dean and Professor in the Department of Educational Psychology and Special Education in the College of Education and Human Services at Southern Illinois University Carbondale, who will also be giving our keynote address on Thursday. Our Friday luncheon speaker is **Dr. Bruce Thompson**, Distinguished Professor and College Distinguished Research Fellow at Texas A&M University. We are very fortunate to have two such outstanding individuals giving our invited addresses. Researchers, graduate students, teachers, and practitioners are invited to come and share their work and conducting and publishing research in education at the 2007 MWERA conference. Educational researchers across North America will once again return to MWERA to renew acquaintances, make new contacts, and engage in exciting conversation in a collegial atmosphere. *Come and be a part of MWERA–2007!*

Look for us on the Web!
Hotel reservation forms are available now.
Conference registration forms are coming soon!
http://www.mwera.org

Thursday Keynote Address

Featured Speaker

Dr. Patricia B. Elmore

Dr. Patricia B. Elmore, Ph.D. is Interim Dean and Professor in the Department of Educational Psychology and Special Education in the College of Education and Human Services at Southern Illinois University Carbondale (SIUC). She received her Master of Science in Education Degree in 1967 and Doctor of Philosophy Degree in 1970 in Educational Psychology with a specialization in Educational Measurement and Statistics. Professor Elmore has over 35 years of experience in higher education. She is immediate past editor of *Measurement and Evaluation in Counseling and Development (MECD)* and incoming editor of *Educational Researcher (ER)*.

Dr. Elmore's professional service includes Treasurer of the Association for Assessment in Counseling and Education (AACE), President, and Representative to the American Counseling Association (ACA) Governing Council; chair of AACE Committees on Bias in Measurement, Position Statements and Standards, and numerous other nominations and positions. Her research in statistics teaching, theoretical models for predicting statistics achievement, school counselor evaluation and test use standards has been presented at national and international conferences and published in dozens of prestigious professional journals. Her book co-authored with Paula L. Woehlke entitled *Basic Statistics* was published by Addison Wesley Longman, Inc. in 1997. The *Handbook of Complementary Methods in Education Research* co-edited with Judith Green and Gregory Camilli was published in 2006 for AERA by Lawrence Erlbaum Associates, Inc.

Dr. Elmore is also a recipient of numerous prestigious awards among which the 1994 American Counseling Association Research Award, induction in the Educational Council of 100 in 2000, and AACE Special Merit Award as *MECD* Journal Editor in 2004.

Join us for a **Fireside Chat**
with **Dr. Elmore** on **Wednesday** evening
The atmosphere is casual and refreshments will be provided!

Friday Keynote Address/Luncheon Address

Featured Speaker

Dr. Bruce Thompson

Dr. Bruce Thompson is **Distinguished Professor** and **College Distinguished Research Fellow** of Educational Psychology, and **Distinguished Professor** of Library Sciences, Texas A&M University, and **Adjunct Professor** of Family and Community Medicine, Baylor College of Medicine (Houston). He is co-editor of the teaching, learning, and human development section of the *American Educational Research Journal* (*AERJ:TLHD*), and past editor of *Educational and Psychological Measurement*, the series, Advances in Social Science Methodology, and two other journals. He is the author/editor of nearly 200 articles, and several books, including the recently published *Foundations of Behavioral Statistics* and *Exploratory and Confirmatory Factor Analysis*. His contributions have been especially influential in moving the field as regards greater emphasis on effect size reporting and interpretation, and promoting improved understanding of score reliability.

Dr. Thompson is recipient of numerous awards among which TAMU Distinguished Achievement Award for Teaching, 2002; TAMU Distinguished Achievement Award for Research, 2000; College Distinguished Achievement Award for Teaching, 1996, and TAMU Distinguished Achievement Award for Individual Student Relations, 1996. His website is **http://www.coe.tamu.edu/~bthompson/**

SPECIAL CONFERENCE HIGHLIGHTS

- **Division Meetings**, including **Invited Speakers**
- **New Member Welcome** – Meet the MWERA officers, authors, and participate in the book rifle.
- **Special Graduate Student Session**

Sheraton Westport Chalet Hotel—St. Louis, Missouri

Lakeside Chalet

191 Westport Plaza Dr., St. Louis, MO 63146 (Phone: 314-878-1500)

- *Complimentary transportation, servicing* **Lambert International Airport** *(6:30 AM – 11:00 PM)*
- *Plenty of complimentary parking in our well-lit covered parking facilities*
- *Centrally located between downtown St. Louis and historic St. Charles*
- *Located 10 minutes from two casinos – Harrah's and Ameristar*
- *Contemporary guest rooms featuring the* **Sheraton Sweet Sleeper Bed**
- *Complimentary in-room coffee service in all guestrooms*
- *Complimentary* ***USA Today*** *newspaper delivered to each guestroom (Monday – Friday)*
- *Full size iron, ironing board, and hair dryers in all guestrooms*
- **Relaxing whirlpool, sauna, and indoor pool at the Plaza Tower**
- *Sparkling outdoor pool with lakeside view at the* **Lakeside Chalet**
- *Late night room service available until 10:30 PM for our guests' convenience*

Westport Plaza *a 42 acre entertainment complex provides:*

- *15 Restaurants*
- *No Streets to Cross / Safe Environment*
- *Easy Access to All Interstates & Highways (70, 270, 40-64 & 44)*

REGISTRATION*: For links to hotel and conference registration, go to:*
http://www.mwera.org

Please support the conference by reserving your room at the Sharaton Westport Chalet Hotel, St. Louis

(Continued from page 18)

like to see more national and less "state or local" control—or at least emphasis on—of public education in the United States today. For example, in a recent article Ravitch (2006) articulates a sentiment that expressly highlights the limitations of fifty different sets of standards, preferring instead one set of national standards. In effect she and others are pushing an essentialist agenda to another level. Standards are better and preferred if they are national as opposed to a myriad of state-oriented standards. This sentiment is indeed reflective of the essentialist trend in American education today.

On the other hand, there are those who would prefer less national government influence and more state and local control of education. In fact, according to Marshall and Gerstl-Pepin (2005),

> [w]hile each of the three presidents that succeeded Reagan focused on national standards, they also continued to emphasize the need for local control over schools. So although the federal role is seen as guiding the nation in school reform, it also acknowledges the importance of local decision-making. (p. 183)

The new era of educational reform represents a sea change. The emphases today are on higher standards, more testing, and greater accountability at both the local and state levels. Driving this change is a national government that is articulating an essentialist philosophy of education. Beginning in the late 1960s, the pendulum shifted to the highest level of government articulating control, setting the stage for top-down change. This has a number of policy implications because the decisions made by officials will be initiated and mandated at the national level and executed by individual states who annually report to the national government. Several questions remain unanswered. Among these are:

- How much leeway will the states be given in following the provisions of *No Child Left Behind*?
- How much money will be provided by each level of government to execute these provisions?
- How much state and local control will be sacrificed in the process?

It remains to be seen whether or not progressive educational practices can be maintained in the neo-essentialist era of national reform.

References

Bestor, A. E. (1953). *Educational wastelands: The retreat from learning in our public schools.* Urbana, IL: The University of Illinois Press.

Dunn, S. G. (2005). *Philosophical foundations of education: Connecting philosophy to theory and practice.* Columbus, OH: Pearson Education.

Epstein, J. (2005, Spring). The national assessment of educational progress: The story of a national test in the making. *American Educational History Journal, 32*(1), 10-19.

Hirsch, E. D., Jr. (1996). *The schools we need and why we don't have them.* New York: Anchor Books.

Improving America's Schools Act. (1994). Public Law 103-382.

Kasper, B. B. (2005, Fall). Educational reform 1983-1994: New ideas or the rebirth of Quintilian's ideologies? *American Educational History Journal*, *32*(2), 175-182.

Knight, G. R. (1998). *Issues and alternatives in educational philosophy* (3rd ed.). Berrien Springs, MI: Andrews University Press.

Marshall, C., & Gerstl-Pepin. (2005). *Re-framing educational politics for social justice.* Boston: Pearson Education, Inc.

National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform.* Washington, DC: U.S. Department of Education.

National Educational Goals Panel. (1998). *The national educational goals report: Building a nation of learners*. Washington, DC: Author.

No Child Left Behind Act of 2001. (2002). Public Law No. 107-110, 115 Statute 1425.

Ornstein, A. C., & Levine, D. U. (2006). *Foundations of education* (9th ed.). Boston: Houghton Mifflin Company.

Paige, R. (2002). An overview of America's education agenda. *Phi Delta Kappan, 83*(9), 708-713.

Pulliam, J. D., & Van Patten, J. J. (2003). *History of education in America* (8th ed.). Columbus, OH: Merrill Prentice Hall.

Ravitch, D. (2006, January 5). National standards: '50 standards for 50 states' is a formula for incoherence and obfuscation. *Education Week*, 54-58.

Snyder, T., Tan, A., & Hoffman, C. (2004). *Digest of educational statistics 2003* (NCES 2005-025). U.S. Department of Education, National Center for Education Statistics. Washington, DC: Government Printing Office.

Urban, W.J., & Wagoner, J.L. (2004). *American education: A history* (3rd ed.). Boston: McGraw-Hill.

U.S. Department of Education. (1991). *America 2000: An education strategy [Sourcebook]*. Washington, DC: Author.

U.S. Department of Education. (1994). *National goals for education: Goals 2000*. Washington, DC: Author.

U.S. Department of Education, Institute of Education Sciences. (2005). *The nation's report card: An introduction to the National Assessment of Educational Progress (NAEP)*. Washington, DC: NCES [2005-454 Revised—not available in hard copy]; see also www.nces.ed.gov/nationsreportcard/pdf/about/2005454.pdf

U.S. Department of Education, Institute of Education Sciences. (2004). *The nation's report card: An overview of NAEP*. Washington, DC: NCES [2004-552].

Webb, L. D., Metha, A., & Jordan, K. F. (2003). *Foundations of American education* (4th ed.). Upper Saddle River, NJ: Pearson Education.

Daily Oral Language: Is It Effective?

Jeff L.Whittingham
University of Central Arkansas

Abstract

This study examines the Daily Oral Language (DOL) program aimed at helping students learn mechanics of writing through daily editing exercises. This nine-month study sought to determine if DOL improved editing skills and actual writing skills of seventy fourth-grade students. While the results of this study did not statistically demonstrate the effectiveness of the DOL program, there were indications of improvement in children's writing and editing skills. Recommendations for further investigation are provided.

Background of the Study

Across the country many students begin their day with a language activity in which the teacher places error-filled sentences on the chalkboard or overhead projector. The students correct the sentences and then orally discuss the corrections with the teacher and classmates. The process takes approximately five minutes and covers a myriad of grammar, usage, and spelling applications. This activity, commonly known as *Daily Oral Language* (DOL), is used widely as an alternative to traditional grammar instruction. Traditional grammar instruction is generally characterized by rote memorization of the rules or conventions and by "skill and drill" practice. This traditional instructional mode may have a detrimental effect on writing and does students great damage (Hillocks, 1984).

This study investigates the use and effectiveness of DOL as an alternative to traditional grammar instruction. Although DOL is an accepted practice to many and is even a promoted practice by instructional text publishers (Farr & Strickland, 2000), there is little research substantiating its use.

Review of Literature

Although the benefits of traditional grammar instruction have long been examined, the foundation of much of the mistrust in its use centers around the work of Braddock and Lloyd-Jones. In 1961, the National Council of Teachers of English charged Braddock and Lloyd-Jones with the task of reviewing what was, at the time, known and unknown about the teaching and learning of writing (Braddock & Lloyd Jones, 1963). The two investigators examined 485 studies. Studies meeting predetermined criteria were included in the review and the investigators determined that the teaching of formal grammar had an insignificant or perhaps damaging effect on the improvement of writing. Braddock and Lloyd-Jones further suggested that all of the time spent in skill and drill produces only minimal return. It can also foster boredom leading to a negative attitude towards the writing.

Hillocks (1984), taking up where Braddock and Lloyd-Jones left off, completed a meta-analysis of every experimental study related to traditional writing instruction produced between 1963 and 1983. The analysis concluded that the study of traditional school grammar had no effect on raising the quality of student writing and when taught using traditional methods, had a harmful effect on student writing which resulted in significant losses in overall quality.

Taylor (1986) attempted to substantiate her own beliefs on traditional grammar education through an examination of related research. She reviewed grammar and usage research produced since the beginning of the last century and, upon conclusion, conceded the traditional method of teaching grammar was no more effective, possibly less so, than a variety of other modes for increasing students' language arts abilities. She concluded that research indicated the time spent teaching grammar was wasted because student writing did not improve.

Studies since the mid-eighties have produced research results similar to the previous findings. The prevailing notion still is that no relationship exists between traditional grammar instruction and learning to write well (Funk, 1994; Glenn, 1995; Glover & Stay, 1995). According to Sanborn (1986), however, drill and memory learning are still the predominant modes of instruction, with students naming parts of speech in order to complete assessments.

Noguchi (1991), in his analysis of grammar and the teaching of writing, suggests traditional grammar instruction is too separated from the daily use of language and, as such, reduces the spontaneity of everyday conversation. This separation causes students to find the study of traditional grammar dry, tedious, boring, and often dreaded. He also notes increasing traditional instruction does not create a corresponding level of writing development. Noguchi theorizes the three major areas of writing are style, content, and organization. While traditional grammar instruction has the most to offer to the area of style, development of content and organization are more critical in improving writing quality. Therefore, one cannot expect traditional grammar instruction to transfer to improvements in student writing.

Schuster (1999) predicts significant reforms in the English language arts will not take place until the traditional teaching of grammar stops. He insists teachers should stop teaching traditional grammar completely and posits there is no advantage in continuing to harm students with something they will never learn or need. He suggests teachers teach usage and mechanics using encouraging, non-technical, and innovative methods. Schuster goes on to add that alternatives

to traditional grammar instruction will not achieve acceptance until professional organizations take a stand and promote a transition away from the teaching methods of the past.

Daily Oral Language, an alternative to traditional grammar instruction, has gained sweeping acceptance and use (Farr & Strickland, 2000; Kiester, 1990, 1993; Lawrence & Levinson, 1987; Leik & Altena, 1993; Lesher, 1993; Vail & Papenfus, 1987, 1993; Williams & Evans, 1998). According to Puckett (1997) teachers believe *DOL* works for several reasons: "First, the students go through the exercises every day, reinforcing what they learn. Also, they read the sentences and explain the corrections out loud, which stresses the lesson and helps them hear subtle differences" (p. J13). Advocates believe the program's greatest benefit comes from requiring students to explain the corrections. This oral component, they posit, makes DOL different from "old-fashioned" traditional methods. However, the fact remains that while DOL is an accepted practice to many and even a promoted practice by instructional text publishers (Farr & Strickland, 2000), there is little research substantiating its use.

Although the *Daily Oral Language* program developed by Vail and Papenfus (1987) has received much attention and wide-spread use and acceptance, there remains a limited body of research related to its application in the classroom. Piotrowski (1987) studied tenth grade students enrolled in a one-semester composition course. Both groups were taught in the same manner except the experimental group was exposed to *Daily Oral Language*. No statistically significant relationship was discovered to exist in the area of objective test scores or student writing scored either analytically or holistically.

Mackenthun (1995) sought to determine if *Daily Oral Language* brought grammar rules to students' conscious levels, transferred to writing knowledge, and was affected by the source of sentences. The researcher concluded that grammar and writing skills did improve when *Daily Oral Language* was used.

A third piece of research related to *Daily Oral Language* only briefly describes its use. McIntyre (1995) investigated which writing skills were learned in a low-SES, urban primary classroom in relation to the students' instruction. *Daily Oral Language* was selected as a method of whole class, direct teaching of grammar usage. Although no data were collected as to the effectiveness of this instruction, the author, a whole language instructor, worried the instruction was too far removed from student writing.

Mullen (2003) taught editing using DOL and the textbook provided weekly grammar lessons. He found that although his students embraced and were successful with DOL, they were not able to edit their own writing. He conducted a study which eliminated the use of *Daily Oral Language* in favor of peer editing, checklists, and computer processing and found these strategies improved students editing skills.

This review of literature indicates traditional grammar instruction is still a prevalent teaching method despite research demonstrating its use as ineffective in improving students' writing ability. DOL is believed by many to be a successful alternative to traditional grammar instruction; however, little research has been conducted to substantiate its use and effectiveness.

Research Questions

The following two research questions were answered separately using total scores for writing and editing:

- Is there a difference between control and experimental groups on post-test editing scores controlling for pre-test editing scores?
- Is there a difference between control and experimental groups on post-test total writing scores controlling for pre-test writing scores?

Methodology

Subjects

The students in this study attended a rural northeast Arkansas elementary school located in a community with a lower-middle socio-economic population. Although the original sample for this study included 86 fourth-grade students, the final sample size decreased to 70 students. This decrease was attributed to loss of students who had moved out of the district or to incomplete data from students who were absent during the administration of the pre-test or post-test. The students were divided into four classes. Two classes comprised the experimental group, and two classes comprised the control group. The researcher and the four teachers decided on classification of experimental and control groups based on teacher desire and familiarity with DOL. That is, the two teachers selected to implement the DOL program were the two most familiar with its use. Students were randomly assigned to the four classes by one of the building principals. Every attempt was made to ensure the anonymity of participants. The students were assigned a coded identification number known only to the researcher. The scorers of the pre-tests and post-tests had no contact with the participants.

Treatment

The control group was taught using traditional grammar instruction without the addition of *Daily Oral Language*. That is, the instruction followed the prescribed directions in the language arts textbook. After a short lesson pertaining to a specific aspect of grammar, students were usually assigned a daily lesson that entailed copying sentences from the textbook and identifying the object of the lesson. The language arts textbook also presented the writing process to increase writing skills.

The experimental group was taught using traditional grammar instruction with the addition of DOL following the third format suggested by Vail and Papenfus (1993).

That is, the teachers placed two error-filled sentences on the board daily during the morning homeroom period. Students began the day by copying the incorrect sentences in a DOL notebook and then correcting them on their own papers. Next the students offered their corrections orally, giving the reason for each while the teacher corrected the sentences on the chalkboard. The control group was taught using traditional grammar instruction without the addition of DOL. Instruction took place during an entire instructional year. Pre-tests were administered in August and post-tests were administered in May for a total of 33 instructional weeks.

Pre-test and post-test editing exercises for all groups were taken directly from the published DOL material and then modified by the researcher, so a total of 12 errors occurred in each exercise. In addition pre-test and post-test writing samples were taken from all participants. Subjects were asked to write a paragraph from an assigned researcher-created prompt (see Appendix A) and were allowed 45 minutes to complete the activity. All participants completed the activity within the allotted time.

Design and Statistical Analysis

The design of the study was experimental and the statistical analysis used was an Analysis of Covariance. Analysis of Covariance is the marriage of Analysis of Variance and regression analysis, and it is often used to improve design efficiency (Kennedy & Bush, 1985).

According to Kennedy & Bush (1985), a function of Analysis of Covariance is to make statistical adjustments for the effects of a covariate when experimental control is impossible or inappropriate. An Analysis of Covariance was selected to make statistical adjustments for the covariate (pre-test scores) on the dependent variable (post-test scores) rather than experimentally controlling for the pre-test.

Kennedy & Bush (1985) further stipulate that to perform an Analysis of Covariance, the researcher must have a covariate. That is, one must possess a score for each participating subject on a covariate that is correlated with a dependent variable. If one is interested in comparing control and experimental groups with respect to their performance on a post-test and has pre-test measures on all participants, scores from the pre-tests could be used as the covariate. In this study a pre-test was administered to all subjects before the treatment began. This pre-test measurement was selected to serve as the covariate in the calculation of the Analysis of Covariance.

Scoring

In order to reduce scorer bias, the pre-tests and post-tests were randomly mixed and given to the scorers after both portions were completed. That is, the scorers scored all of the pre-tests and post-tests at one time without knowledge of which papers were pre-tests or which papers were post-tests.

Writing samples were rated anonymously by two readers using an analytic rubric (see Appendix B). Both readers were trained by the researcher to use the scoring rubric. A Pearson Correlation Coefficient was calculated with the scores from Reader One and Reader Two using the SAS system. The pre-test correlation was calculated to be r=.88. The post-test correlation was calculated to be r=.91. These correlations determined sufficient inter-rater reliability.

DOL editing exercises were scored by the researcher and a colleague. For purposes of inter-rater reliability and to guard against researcher bias, both the researcher and colleague scored one-third of all responses. Percentages calculated by the researcher and the colleague were proofed by a second colleague for accuracy. Because the second colleague determined there was no difference in any of the first one-third of the scores that had been calculated, the researcher scored the remaining responses.

Results

The first question of this study asked: Is there a difference between control and experimental groups on post-test editing scores controlling for pre-test editing?

An Analysis of Covariance (ANCOVA) was selected as the statistical procedure of choice to control for the effect of the pre-test between the two groups. Prior to calculating an ANCOVA, two assumptions must be met: a) Is the covariate statistically significantly related to the dependent variable? and b) Is the homogeneity of regression assumption met?

In order to test that the first assumption had been met, a Pearson Correlation was calculated using SPSS. A correlation of .340 indicated there was a statistically significant relationship at the 0.01 level between the covariate (pre-test editing scores) and the dependent variable (post-test editing scores). This indicated the first assumption had been met.

The interaction of the covariate with the treatment that was used to test for homogeneity of regression for the editing test was not statistically significant $F\,(1,66) = .00$, $p = .949$. This indicated the assumption of equal slopes had been met and lent support for the use of ANCOVA in this study.

The raw score means, standard deviations, and least square means for editing reflect scores similar to those for writing (Table 1). Results of the ANCOVA for editing indicated an F ratio of .316 and a significance of .576 (Table 2). Results of the ANCOVA for editing revealed no statistically significant difference between experimental and control groups.

The second question of this investigation asked: Is there a difference between control and experimental groups on post-test total writing scores controlling for pre-test writing scores?

An Analysis of Covariance was selected as the statistical procedure of choice to control for the effect of the pre-test between the two groups. Prior to calculating an ANCOVA, two assumptions must be met: a) Is the covariate statistically significantly related to the dependent variable? and b) Is the homogeneity of regression assumption met?

In order to test the first assumption had been met, a Pearson Correlation was calculated using SPSS. A correlation of .482 indicated there was a statistically significant relationship at 0.01 level between the covariate (pre-test writing scores) and the dependent variable (post-test writing scores). This indicated the first assumption had been met.

The interaction of the covariate with the treatment that was used to test for homogeneity of regression for the writing test was not statistically significant $F(1,66) = .37$, $p = .544$. This indicated the assumption of equal slopes had been met and lent support for the use of ANCOVA in this study.

The raw score means, standard deviations, and least square means for writing reflected scores similar to those for editing (Table 4). Results of the ANCOVA for writing indicated an F ratio of .144 and a significance of .706 (Table 4). The results for writing revealed no statistically significant difference between experimental and control groups.

Summary

The results of the ANCOVA indicated there was no statistically significant difference between experimental and control groups in either editing or writing. This result demonstrates the need to further investigate the use of the DOL program.

Conclusions and Recommendations

Conclusions

This study of elementary students found there was not a statistically significant improvement in the students' editing and writing skills when Daily Oral Language (DOL) was used as an instructional methodology over the period of one school year. These results are consistent with the results of previous research. According to Piotrowski's (1987) study using DOL with high school students, while scores improved,

Table 1
Means, Standard Deviations, and Least Square Means for Editing by Treatment Group

Group	*N*	Mean	Standard Deviation	Least Square Means
Editing, Pre-Test, Control	36	28.808	21.8566	
Editing, Post-Test, Control	36	51.817	17.5480	51.347
Editing, Pre-Test, Experimental	34	25.459	21.0172	
Editing, Post-Test, Experimental	34	53.147	18.5138	53.645

Table 2
Analysis of Covariance for Editing

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
Corrected Model	2644.530	2	1322.265	4.549	.014
Intercept	52689.515	1	52689.515	181.267	.000
Pre-edit	2613.582	1	2613.582	8.991	.004
Group	91.790	1	91.790	.316	.576
Error	19475.113	67	290.673		
Total	214784.240	70			

Table 3
Means, Standard Deviations, and Least Square Means for Writing by Treatment Group

Group	*N*	Mean	Standard Deviation	Least Square Means
Writing Pre-Test, Control	36	35.264	6.2558	
Writing Post-Test, Control	36	37.611	7.1884	36.334
Writing Pre-Test, Experimental	34	30.191	5.9212	
Writing Post-Test, Experimental	34	35.588	6.5661	36.941

Table 4
Analysis of Covariance of Writing

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
Corrected Model	750.850	2	375.425	9.856	.000
Intercept	879.406	1	879.406	23.088	.000
Prewrite	679.298	1	679.298	17.834	.000
Group	5.475	1	5.475	.144	.706
Error	2551.993	67	38.089		
Total	97218.500	70			

no statistically significant relationship was found in the areas of objective test scores using the Writing Skills portion of the *Sequential Tests of Educational Progress III (STEP)*, Level J, Form X, or student writing scored analytically. Mackenthun (1995), while working with middle school students, found improvement in student writing while using *DOL*; however, no statistical analysis was used to substantiate these improvements.

Descriptive statistic results indicated improvements occurred in both the editing and writing portions of this study. However, closer analysis using an ANCOVA demonstrated that, while the scores improved, no statistically significant differences occurred.

The improvement that occurred, though not statistically significant, was evident in other ways. The students involved in the study began to be more aware of common mechanical errors when writing. This awareness was demonstrated when students were peer editing papers during writing activities. The classroom teachers observed that students were often much more capable of recognizing the mistakes of others than recognizing their own errors. This ability could have been caused by an over familiarity with their own writing. On the other hand, the task of editing the work of others is very similar to the task of editing unknown sentences provided in the *Daily Oral Language* program and, therefore, could have provided a more familiar editing situation.

Improvement also occurred in the amount of writing that students were willing to produce. Many of the pre-test writing pieces were short and seemed to have been written without much planning or thought to the end product. The post-test writing pieces were, on the whole, much stronger works of greater length. There seemed to be greater awareness of mechanics usage in the post-test writing pieces. This increased awareness was, perhaps, due either to natural development or to the time spent on writing tasks during the fourth grade year.

Recommendations

Although this study focused specifically on the DOL program, it is important to understand the impetus for the study was the belief that traditional grammar instruction is ineffective and at times detrimental to student growth. While the results of this study did not statistically validate the use of DOL, it is important for researchers to examine alternatives to traditional grammar instruction.

The results of this study should not completely negate the effectiveness of the DOL program. Closer study of DOL, or of similar methodologies, is most certainly warranted. Although the short daily practice covering a multitude of skills is considered to be a non-traditional approach, the fact that the sentences are pre-selected and packaged gives the program a somewhat traditional feel as these sentences are far removed from the students' daily lives and classroom experiences. Variations of DOL utilizing students' own "errors" in writing mechanics and usage may provide the closer fit needed for effective transfer of learning. Instead of using the canned program, teachers might use carefully selected sentences from student work, being cautious to maintain the anonymity of the writer. This variation might cause students to take more ownership in the program and spur them to achieve more significant results. It would also allow teachers to select sentences focusing on particular errors made by their students. Mackenthun (1995) advocates this practice, noting students become excited about the activity when checking to see if any of their work has been selected for use in the lesson. She adds that the age-appropriateness and personalization of the topics of these sentences appeal to students.

Further study might examine the use of the program with specifically identified groups such as gifted, special education, or ESL students. The DOL program may deliver necessary instruction and guided practice of particular benefit to such students, thus providing a needed fit for particular populations. For example, Whitmore (1985) asserts that underachieving gifted students often lack motivation due to the incompatibility of their learning styles with traditional instruction. DOL, with its focus on non-traditional instruction, might be better suited for gifted students. Large, Maholovich, Hopkins, Rhein, and Zwolinski (1997), in a study developed and implemented to improve and motivate the writing of elementary and special education students, concluded DOL was an effective way to improve skill development. Additionally, Hallenbeck (1999) believes students with learning disabilities often learn better by peer collaboration in a non-traditional setting than in a traditional classroom where their role is to passively receive information. DOL provides just such collaboration as teacher and students have daily dialogue about editing. The social aspect of DOL is also important to ESL students. Adunyarittigun (1993) suggests language acquisition is incomplete for ESL students unless time is allowed for social interaction, sharing individual interpretations, and question and answer sessions. DOL provides for these social opportunities.

Although the results of this study which was completed with fourth grade students over a nine-month period do not statistically demonstrate the effectiveness of the DOL program, there were indications of improvement in children's writing and editing skills. Such improvement needs further examination. While DOL has achieved wide-spread use (Farr & Strickland, 2000; Keister, 1990; Lawrence & Levinson, 1987; Leik & Altena, 1993; Lesher, 1993; Williams & Evans, 1998), this study should wave a red flag to educators who blindly accept DOL as a quick fix to overcoming grammar weaknesses. In fact, teachers and other curriculum stakehold-

ers should carefully review research before adopting any new curricular material.

References

Andunyarittigun, D. (1993). *Whole language: A whole new world for ESL programs*. Unpublished report. (Eric Document Reproduction Service No. ED 386024)

Braddock, R., & Lloyd-Jones, R. (1963). *Research in written composition*. Urbana, IL: National Council of Teachers of English.

Farr, R. C., & Strickland, D. S. (2000). *Hidden treasures*. Orlando, FL: Harcourt Brace and Company.

Funk, R. (1994). *The uneasy partnership between grammar and writing instruction*. Partial proceedings of the annual conference of the Assembly for the Teaching of English Grammar, 5 (pp. 22-25). Normal, IL: National Council of Teachers of English.

Glenn, C. (1995). When grammar was a language art. In S. Hunter & R. Wallace (Eds.), *The place of grammar in writing instruction: Past, present, future* (pp. 2-29). Portsmouth, NH: Boynton/Cook.

Glover, C. W., & Stay, B. L. (1995). Grammar in the writing center: Opportunities for discovery and change. In S. Hunter & R. Wallace (Eds.), *The place of grammar in writing instruction: Past, present, future* (pp.129-135). Portsmouth, NH: Boynton/Cook.

Hallenbeck, M. J. (1999, April). *Taking charge: Adolescents with learning disabilities assume responsibility for their own writing*. Paper presented at the annual convention of the Council for Exceptional Children, Charlotte, NC.

Hillocks, G. (1984). What works in teaching composition: A meta-analysis of experimental treatment studies. *American Journal of Education, 93,* 133-170.

Kennedy, J. J., & Bush, A. J. (1985). *An introduction to the design and analysis of experiments in behavioral research*. Lantham, MD: University Press of America.

Kiester, J. B. (1990). *Caught'ya! Grammar with a giggle*. Gainesville, FL: Maupin House Publishing.

Kiester, J. B. (1993). *Caught'ya again! More grammar with a giggle*. Gainesville, FL: Maupin House Publishing.

Large, C. M., Maholovich, W. A., Hopkins, L. J., Rhein, D. M., & Zwolinski, L. J. (1997). *Improving and motivating children's writing*. M.A. Project, Saint Xavier University. (ERIC Document Reproduction Service No. ED411516)

Lawrence, P. M., & Levinson, B. F. (1987). *Dictation - Alive and well. English Journal,76*(6), 49-50.

Leik, J., & Altena, S. (1993). *Thematic oral language for daily use.* Grand Rapids, MI: Instructional Fair.

Lesher, T. (1993). Editing: The key to teaching grammar. *Proceedings of the Association of Teachers of English Grammar, 4* (pp. 33-36). Williamsport, PA: National Council of Teachers of English.

Mackenthun, L. E. (1995). *A study of the effectiveness of DOL in helping middle level students with their grammar skills*. Unpublished master's thesis, St. Cloud State University, St. Cloud, MN.

McIntyre, E. (1995). Teaching and learning writing skills in a low-ses, urban primary classroom. *Journal of Reading Behavior, 27*(2), 213-242.

Mullen, M. P. (2003). *Excellence in elementary editing*. (ERIC Document Reproduction Service No. ED479069).

Noguchi, R. R. (1991). *Grammar and the teaching of writing*. Urbana, IL: National Council of Teachers of English.

Piotrowski, J. (1987). *DOL exercises: Their effect in improving correct use of capitalization, punctuation, and usage*. Unpublished master's thesis, University of Wisconsin-Eau Claire, Eau Claire, WI.

Puckett, P. (1997, October 16) School watch: Daily lessons emphasize grammar. *The Atlanta Journal and Constitution*, p. J13.

Sanborn, J. (1986). Grammar: Good wine before its time. *English Journal, 75*(3), 72-80.

Schuster, E. H. (1999). Reforming English language arts: Let's trash the tradition. *Phi Delta Kappan, 80*(7), 518-524.

Taylor, S. J. (1986). Grammar curriculum - Back to square one. *English Journal, 75*(1), 94-98.

Vail N. J., & Papenfus J. F. (1987). *DOL*. Evanston, IL: McDougal, Littell, and Company.

Vail N. J., & Papenfus J. F. (1993). *DOL plus teacher's manual*. Wilmington, MA: Great Source Education Group.

Whitmore, J. R. (1985) *Underachieving gifted students*. Reston, VA: ERIC Clearinghouse on Handicapped and Gifted Children.

Williams, L. B., & Evans, M. (1998). *Daily language review: Grade four*. Monterey, CA: Evan-Moor Corporation.

Appendix A

Writing Prompts

Pre-treatment Writing Prompt: Almost everyone likes to do fun things during his or her spare time. Some people like to sing, dance, create artwork, collect things, or participate in sports. Tell about a hobby or activity that you enjoy, and explain why you enjoy that hobby or activity.

Post-treatment Writing Prompt: Think about how you spend Saturdays during the school year. Think about the things you do with friends and family members. Tell about one particular Saturday, and explain exactly what you did that day.

Appendix B

Scoring Rubric

Points

6 There are few or no minor errors. There are no major errors.

5 There may be a few minor errors, but no more than one major error.

4 There are some minor errors, a few major errors.
There is sufficient evidence of the mastery of sentence construction, given the writing conditions.

3 There are numerous minor errors, and some major errors.
Sentence construction is below mastery.

2 There are many major errors, causing some confusion.

1 Errors are so numerous and serious that they interfere with communication.
The amount of writing is insufficient to show that the criteria are met.

	Minor Errors	Major Errors
Usage	-Awkward or odd use of words/phrases, but meaning is still clear -Homonyms-its/it's; their/there; to/two/too	-Incorrect use of common words -Incorrect pronoun reference -Subject-verb agreement -Tense shifts -Double negatives/subjects
Capitalization	-In quotations	-Initial caps -Common proper nouns
Punctuation	-Periods for abbreviations -Commas in a series	Ending punctuation -Apostrophes -Commas separating quotations. -Parentheses
Spelling	-Unusual, less frequently used words	-Misspelled common words -Same word misspelled in counted only once

Illinois State Board of Education (1991).*Write on, Illinois!* Springfield, IL: Author.

Evolutionary Systems Theory, Universities, and Endogenous Regional Economic Development

William M. Bowen
Cleveland State University

Abstract

Universities today are increasingly being viewed in terms of serving the purpose of economic development. This paper postulates that their chief purpose is to advance knowledge and that in doing so they effectuate regional economic growth and development through processes specified in the endogenous economic growth model. To achieve this purpose and to contribute optimally to regional economic growth and development arguably requires coherent educational policies. The central proposition is that to formulate coherent educational policies for endogenous regional economic development requires placement of a theory of the advancement of knowledge at the center of related policy deliberations. An evolutionary systems theoretic framework is proposed, and some implications for educational policy are elucidated.

Introduction and Background

Universities today are increasingly viewed by public policy makers in terms of their service to regional economic development. Indeed, ever since 1862, when federalization of U.S. universities began with the establishment of land grant universities, the growth and advancement of knowledge has been recognized as having instant regional economic development implications. The initial goals of U.S. universities were technology transfer and the improvement and expansion of agriculture. Today, researchers in economics and regional science tend to recognize two ways that universities help regional economies grow and develop. First, new knowledge from research stimulates technology innovations, new products, technology-based competitive advantage, and labor force enhancements (Anselin, Attila and Acs, 2000; Anselin, Attila and Acs, 2000a; Anselin, Attila and Acs, 2000b; Feldman, 1994; Harrington & Ferguson, 2001; Jaffe, 1989; Stough, 2001). Second, research and teaching preserves and transmits an existing stock of knowledge for skilled labor and in doing so increases the region's human capital stock and employment (Thanki, 1999). The progress made in these two ways together constitutes what I refer to herein broadly as "the advancement of knowledge."

While broad agreement exists on the view that universities contribute to regional economic development, not every approach to making investments in, providing incentives for, or organizing universities to serve the ends of regional economic development, is equally viable and productive. Knowledge advances more efficiently and effectively in some universities than it does in others; thus some universities contribute more than do others to regional economic growth and development. The thesis of this paper is that a theory of the origins and dynamics of knowledge is a necessary component of any coherent answer to this question. Such a theory is required to provide otherwise absent information, guidance, and discipline in terms that are useful in the process of deliberating upon and selecting between higher educational policy-alternatives. Indeed, Bartley (1990) charges that the currently widespread lack of such a theory largely precludes universities today from organizing themselves around principles that could otherwise enable them to make substantially enhanced contributions to economic growth and development.

This paper postulates that advancements in knowledge effectuate regional economic growth and development through processes described roughly in the economics and regional science literatures in terms of the endogenous growth model (Romer, 1986; Romer, 1990).[1] The following section introduces the endogenous growth model. More specifically, the paper is predicated upon an evolutionary theoretic framework in which knowledge is viewed as the outcome of discernable patterns of psychological processes characterized—as all evolutionary processes arguably are—by variation, interaction, and selection criteria (Campbell, 1987). Accordingly, there is a natural explanation for the advancement of knowledge. That is, a region's knowledge base advances through processes in which variation is initially generated in terms of new and creative ideas, hypotheses, and conjectures, some of which is subsequently destroyed in the process of refutation or interaction between the new variants and the systems to which they relate (Campbell, 1960; Cziko and Campbell, 1990; Heylighen, 2000; Popper, 1963; Radnitzky and Bartley, 1987; Von Bertalanffy, 1952). Recent investigations have suggested that the evolution of knowledge can be thus modeled and used to help understand human societies using the same basic principles of variation and selection that underlie biological evolution (Boyd & Richerson, 1985; Csanyi, 1991; Lumsden & Wilson, 1981; Lynch, 1997).

While universities are certainly not the only source of advancements in a region's knowledge base, they are nevertheless "prime movers" in this regard (Bowen and Schwartz, 2005). That is, they are the primary social institutions dedicated to the creation, preservation, transmission and new application of knowledge. The formation of wealth and well being in a region is inextricably linked with the conditions that govern and constrain their productivity. Accord-

ingly, insofar as the levels of advancement of knowledge in a region depends upon what goes on within its universities, coherence demands placement of a theory of the origins and dynamics of knowledge at the center of deliberations regarding the region's educational policies. As it turns out, evolutionary systems theory provides a viable and potentially fertile framework for this purpose. It helps to make explicit and explain the underlying linkages between the conditions that govern and constrain the advancement of knowledge, the endogenous growth model, and regional economic growth and development. In doing so it also helps to frame the endogenous growth model in terms that are meaningful with respect to the likely consequences of making commitments to particular educational policy alternatives.

The Endogenous Growth Model

Until relatively recently, the dominant view of regional economic growth and development held by scholars in the fields of economics, regional science, economic geography, and economic development was found in exogenous growth models (Borts & Stein, 1964).[2] These models were predicated on a theoretical framework in which a region's economic growth and development depended explicitly upon increases in labor productivity, and only labor productivity.[3] In turn, increases in labor productivity were seen as being stimulated by investment in the material factors of production or by growth in the labor force. The basic idea was that capital investment leads to economic growth and development by establishing possibilities for the substitution of capital for labor in production processes, enabling the same number of workers to produce more output. Of course, growth in the labor force—caused either by a birth rate higher than a death rate or by net positive immigration—could effectuate economic growth simply because more workers yield more output. But theoretically this could occur only so long as the capital-to-labor ratio grows, which is to say so long as growth in the labor force is accompanied by a proportionally larger capital investment.

In the exogenous growth models, knowledge was treated effectively as an epiphenomenon, an undifferentiated and unspecified residual or error factor that accounted for whatever observed economic growth could not otherwise be explained on the basis of increases in labor productivity. In other words, only that residual economic growth that could not otherwise be explained by increases in capital investment and growth in the labor force was attributed to the influence of knowledge. Formally, this inexplicable growth was known as the "Solow residual." Knowledge was not conceptualized and treated explicitly as a phenomenon capable of explaining economic growth in its own right. Therefore, questions about what educational policies would establish the conditions optimally conducive to advancement of a region's knowledge base did not arise in discussions about regional economic growth and development.

This perspective began to change when Romer (1986) postulated the endogenous growth model.[4] Knowledge became an explicit independent factor in regional economic growth. This started a shift in thinking to what has come to be known as the new economic growth theory. Accordingly, not only does new knowledge have an explicit causal role in economic growth and development, but endogenously generated increases in knowledge are themselves the results of economic events that have a significant impact upon the region's economy (Johansson, Karlsson & Stough, 2001; Romer, 1986, Stough, 2001). To make the regional economic growth and development process coherent thus requires not only an explanation of how increases in labor productivity increase economic output, but also an intelligible rendering of the central facts about the parameters that govern and constrain changes in the region's knowledge base.

On the basis of the endogenous growth model, theoretical specification and clarification of the processes through which the origins and dynamics of knowledge operate and cause regional economic growth and development becomes not only possible but also necessary for the sake of coherence. Without it, the core economic growth and development concept of knowledge cannot be subsumed within a sufficiently detailed economic theoretical framework for it to be brought meaningfully within the purview of the human mind and tested against experience. In view of that, several possible determinants of endogenous economic growth and development have been proposed including human capital investment (Mathur, 1999), community and institutional variables such as leadership, learning, and social capital (Stough, 2001), ethnic diversity (Rupasingha, Goetz & Freshwater, 2002), labor force development (Harrington & Ferguson, 2001), and entrepreneurship (Armstrong & Taylor, 2000).

An Evolutionary Systems Theoretic View of Knowledge

In the perspective of evolutionary systems theory, knowledge may be characterized as a product of inquiry designed to gather and structure information in a logical form that reduces uncertainty about some segment of the world (Bartley, 1990; Heylighen, 1997). Campbell (1960) describes the underlying epistemological and psychological processes through which new knowledge is created, and through which it comes to prove itself to be viable or not. The description is based upon a distinction between the creative and productive aspects of inquiry. Accordingly, the initial source of new knowledge is found in creative thought that originates in the imagination and from there brings about something that did not exist before. This might include a new conjecture, research question, hypothesis, or research design, or perhaps an aspect of the qualitative reasoning processes involved in planning or interpreting a research project. The point here is that only once creative thought has occurred and once a new conjecture is available do the productive aspects come into play in terms of tests and trials in application.

In contrast to creative thought, productive thought processes are essentially mechanical and synthetic in character, in many ways much like an assembly line. They provide order, system, method, logic and feedback to the learning process. They include activities such as reviewing the literature, taking measurements, administering surveys, making observations, rendering observations, conducting analysis, and writing research reports. They help to determine whether or to what degree the newly created conjecture is sufficiently accurate that when put into overt locomotion it is apt to lead to adaptive, intelligent behavior. When creative and productive thought interact and work together successfully the effect is to reduce uncertainty, and thereby to enhance the investigator's potential to direct a course of events towards predetermined ends and goals. None of the cognitive processes involved in either type of thought is to be assumed to be fundamentally valid, so all knowledge is inevitably approximate and imperfect (Campbell, 1987).

One of the principles found in the evolutionary systems theoretic literature stipulates that when in the learning process creative thought leads to the formation of a new idea or hypothesis, before it is subjected to a sustained process of repeated trial and systematic search for error there is no way to tell whether or not it will prove to be viable. Campbell (1960) referred to this as the "principle of blind variation". Formally, this principle states that: "at the most fundamental level variation processes 'do not know' which of the variants they produce will turn out to be selected" (Heylighen, 1991). That is, according to Campbell, at the time a new idea appears, the only yardstick against which to measure whether it will enter into and remain a part of a body of knowledge is whether it works in application, i.e., whether it contributes to or enables human actions that thereby attain the ends toward which it is put. Moreover, Campbell argues that there is no generally applicable way to tell in advance at the time an idea arises, before it is put to the test of informing action and before feedback about the outcomes of its application is available, how it will measure on this yardstick. Indeed, it tends to be difficult at best to predict which new ideas will disappear, which will prove to be adaptive and will survive, and how the survivors will impact society and the environment. History is replete with examples of the difficulties of predicting the viability and impact of new ideas.

In general, on this view the test of an idea's viability is whether it can withstand selective pressures that exist within the situations in which it is utilized. When a new idea appears it has yet to withstand any consistent tests of trial and error and its viability therefore remains undetermined. Such tests prove it to be selectively useful and beneficial, indifferent, or disadvantageous to whoever carries it. If, in application, an idea consistently leads to predictions that better enable purposive action then it is apt in application to dependably bring satisfaction and one can say that within its range of applicability the idea is "adaptive." If an idea is adaptive, the individuals who carry it benefit from it. Otherwise, if it proves to be disadvantageous, it is said to be "maladaptive." Maladaptive ideas tend to have only enough cognitive significance to appear viable on their face, perhaps only to certain subsets of individuals, but they will be selected against when they are found to lead to the prediction of events that, according to future experience, in fact do not occur. Finally, innumerable ideas are simply useless and can be determined as such on their face through exercise of discriminating judgment. The preponderance of new ideas probably belongs in this latter category.

More specifically, the evolutionary systems theoretic literature tends to stipulate that the viability of an idea is determined by repeated instances of a method in which whoever would utilize it creates in his or her imagination an abstract representation or mental model (substitute) of a sequence of events that, on the basis of inferential logic, will follow from an action it implies. Sometimes such actions are planned formally as manipulations in experimental designs, but most often not. In designing such a representation, the concern is not with whether or not (or to what extent) the image depicts the actual situation within which the action is being deliberated. Nor is the concern with the question of whether or not (or to what extent) one could defensibly attribute the property of natural existence to such a system as the image posits. Even if upon detailed examination the image would be found to imply categories of thought and action at odds with fundamental logical relations beyond the creative power of humans to imagine, if it successfully predicts events within some finite range of situations it can prove to be adaptive. The desiderata for the viability of any new idea or hypothesis have to do with whether or to what extent, within the range of its applicability, it successfully contributes to or enables human actions that thereby more effectively attain the ends toward which it is put.

Blind variation provides a mechanism for introducing variation of ideas into human thought processes. But for knowledge to advance there must also be a consistent selection process through which some ideas are retained and others rejected and a method for retaining the ideas that prove to enhance successful predictions. Accordingly, the evolutionary systems theoretic principle of selective retention says that "stable" ideas tend to be retained, and "unstable" ideas tend to be eliminated (Heylighen, 1991a). Ashby (1952, p. vi) stated this idea as follows:

> Just as, in the species, the truism that the dead cannot breed implies that there is a fundamental tendency for the successful to replace the unsuccessful, so in the nervous system does the truism that the unstable tends to destroy itself imply that there is a fundamental tendency for the stable to replace the unstable.

Stable ideas are ones that possess flexibility, plasticity, or resiliency under the impact of new experience. To be recognized as such, there must be some way to discern and identify them and distinguish them from other ideas. Thus they must have a more or less definite and characteristic structure. The principle of selective retention states that if an idea is stable,

its structure remains within recognizable and defined limits despite the impact of sustained critique, new information, and testing.[5]

If all ideas had the same potential to contribute to bodies of knowledge, then one might say that they are all equally viable and there would be no basis from which to select one as compared to another. No selectors would have any value. The reality, however, is that some ideas are viable and others are not. For instance, the idea that morality should relate to respect for human dignity that any individual should have for himself, for others, and for the world in which we live appears to be viable; the idea that morality should show a blind compliance with various rules or social, religious, or political dogmas appears not. Though there appear to be no general criteria with which to evaluate and predict the viability of new ideas or hypotheses before they are tried in application and thus to "pre-select" them, one can with various levels of confidence find specific and circumstantially limited criteria that can be used for this purpose.

Factors or agents that distinguish between viable ideas and not viable ideas are known in the evolutionary systems theoretic literature as "selectors." Accordingly, sometimes selectors are objective, as when ideas are selected against by virtue of the fact that they lead repeatedly to predictions that are contrary to observations governed and constrained by the laws of physics or supply and demand. Sometimes they are subjective, as when ideas imply actions that consistently lead to results that are contrary to particular institutional arrangements or deeply held human values. Sometimes selectors are inter-subjective, as when formal scientific hypotheses are rejected as being incoherent in light of a given body of scientific knowledge. In any case selectors are factors or agents that exist either within the internal structure of the system on one hand or thought about that system on the other, and they are capable of constraining, limiting, or eliminating particular ideas while at the same time retaining or admitting others (Heylighen, 1997). To the extent that a selector inheres within any part of the cognitive or information-processing activities of the human brain, including perception, thinking, decision-making, or any part of the structure of interconnected items of knowledge or belief held by an individual, one may refer to it as a "vicarious selector."[6] Thus, previously created, tested, and stored scientific knowledge can potentially function vicariously as one such selector of ideas and new knowledge.

Implications for Augmenting Universities' Endogenous Regional Economic Impacts

Evolutionary systems theory provides a framework with which to conceptualize and render intelligible the mechanism by which a region's knowledge base changes and effectuates endogenous regional economic growth and development. Inasmuch as it stems from new knowledge it is, accordingly, a result of the cognitive processes described by the principles of blind variation and selective retention. That is, regional economic growth and development depends upon blind variation inasmuch as it is the process through which new knowledge is created and produced. Blind variation is also instrumental in stipulating new and innovative applications for previously created and stored knowledge. Regional economic growth and development furthermore depends upon selective retention inasmuch as it is the process through which previously created and stored knowledge is updated and found to be viable or not. Together the processes of blind variation and selective retention have clear implications for deliberations over educational policy alternatives designed to augment the regional economic impacts of universities.

First, the principle of blind variation implies that there are substantial inherent limitations on the human ability to predict exactly which new ideas will lead to the particular new knowledge that will eventually prove to be successful at effectuating regional economic growth and development. That is, according to the principle of blind variation the advancement of knowledge is blind in the sense that it may be described in terms of transitions only from one state or condition at one time to another state at the immediately following time. The predictability of any given future state of knowledge is thus not improved by looking farther back into the sequence of states preceding the immediate past one. This is another way of stating Popper's (1991) point that there are no rational or scientific methods by which the future growth of knowledge can be predicted. Because new knowledge always starts with blind variation, the future growth path of knowledge is in general not predictable using rational or scientific methods today.[7] Accordingly, it makes sense for policy makers to avoid narrowly targeted educational investments, such as in medicine, biochemistry or information technology, and to concentrate them instead upon broadly defined human capital accumulation strategies and incentives for high quality thought in whatever area autonomous investigators find to be interesting and worthwhile. That is, the inherent limitation on the human ability to predict which ideas will yield viable new knowledge implies that the interest of society is best served by tolerating—indeed, actively protecting and supporting—an entire range of programs, policies, practices and educational activities designed specifically to enable the widest feasible variety of ideas to remain available for legitimate discussion, argumentation, and questioning. Emphasis upon well designed general education requirements and broad human capital investment strategies, not selective and narrowly-targeted industry or sector-specific strategies, are implicated.

Second, new knowledge arises initially through cognitive processes that operate always and only at the level of individuals, not at the level of groups of individuals, cultures or societies. While these processes may be influenced by groups, cultures or societies—for example by their characteristic willingness to tolerate individual differences and to consider new and different ideas—in the end endogenously

generated expansion and growth of a region's knowledge base depends upon the cognitive thought processes underlying blind variation and selective retention. Since thought is always an individual level manifestation (every bit as much as are eating and drinking), explanations of economic growth and development which are supervened upon individual actions without at the same time providing an explanation of how they reduce to the micro-level cognitive processes through which individuals create and produce new knowledge must thus always remain incomplete and, in this extent, incoherent (Kincaid, 1995). Accordingly, considerations about the ways and means by which universities stimulate regional endogenous economic growth and development through new knowledge cannot without loss of coherence be separated from considerations about the educational constraints upon the psychological and epistemological processes through which knowledge is created and produced at the level of individuals.

Third, the principles of blind variation and selective retention imply that the actions, policies and manipulations required to stimulate endogenous regional economic growth and development are far more indirect than is conventionally recognized. They necessarily involve manipulating the causal relationship between blind variation and selective retention, on one hand, and regional economic growth and development, on the other. Accordingly, Bowen & Schwartz (2005) hypothesize that the rate of advancement of knowledge at any time is proportional to the variation of ideas at that time, so that the strategy optimally conducive for endogenous regional economic growth and development is one of consciously conserving the greatest possible variation of ideas. The key to success in terms of university contributions to regional economic growth and development is thus found a combination of two conditions. First is higher educational policy aimed toward maintenance of a ready stock of competing ideas. The requisite conditions are specifically those that enable a stock of competing ideas to be conserved and discussed freely and openly and carefully tested through well designed experiments and applications; in which the broadest feasible spectrum of individuals feel free to think creatively; to act and to err and to freely recognize error when it is made; to pursue their own self-fulfillment and the attainment of truth as they understand it; to actively participate in collective decision-making; and to seek their own individual sense of balance between stability and change. Second is high academic standards designed to ensure careful and systematic utilization of the existing stock of vicarious selectors. This helps enable individuals to determine whether their ideas can prove themselves to be viable and effective or not.

In this context, the specific educational factors that impose constraints upon these conditions can be broadly categorized into situational, personal, and methodological factors. Situational factors are those that exist within the task environments faced by individuals. They function by channeling thought, communication and behavior largely through the imposition of rules, some of which are written into various institutional arrangements (such as laws and statutes), some of which take the form of social norms, and some of which reflect the dominant values within the relevant communities. These community values determine, for instance, the characteristics of organizations and groups such as their degree of willingness to acknowledge error, their willingness to dissent and to consider the expression of unorthodox ideas, viewpoints, and behaviors, and their tolerance for individual differences. Lack of resources is also a situational factor that potentially limits the rate of new knowledge production within universities.

Personal factors set limits in place that are idiosyncratic to individuals and that are associated with various personalities, abilities, talents, attitudes, beliefs, and individual values. Personal factors partially determine, for instance, whether one person or another is the right person to perform a particular task, such as proposing a new idea to a group. These are the factors that are properly considered in decisions related to university admissions and standards, as well as to the selection, retention, and promotion of administrators, faculty and staff, especially as they relate to the demonstration of the requisite knowledge, skills and abilities by individuals.

Finally, methodological factors determine the range of applicability of vicarious selection. These are factors such as limitations on the availability of description and analysis in relation to the processes of scientific inquiry, the potentialities and limitations of particular techniques, or the specification of their presuppositions and epistemological consequences. Methodological constraints are those that bind individual thoughts and actions by making it infeasible to take the actions required to create new knowledge specifically because there is no known way to perform them. Methodological factors imply the necessity of improvements in technological knowledge, applied technology, and incentives for knowledge utilization.

Basis for Possible Refutation

As soon as one begins to consider not only the immediately discernable effects of universities but also to measure in any strict sense the ways that they contribute more broadly to regional economic development, the difficulties of empirical testing become far greater. An intricate web of institutional and social factors immediately becomes involved. The causal mechanisms that require testing include not only indicators of the degree to which knowledge is advanced within them, but also of the degree to which that knowledge is adopted throughout the workforce. That is, before it is possible to isolate and measure the regional economic effects that follow from the knowledge advanced specifically from within a given university, the contribution of that particular knowledge to regional economic growth and development has to be separated out and controlled vis-à-vis the effects of other important factors such as the region's stock of capital, labor force, and rates of productivity. Potentially confounding variables include industrial investments in research and develop-

ment, institutional factors such as the level of formality of a region's institutions, the numbers of actors and groups that can be effectively influenced by a given change in policies or programs, and the spatial and temporal extent to which local values, mores, beliefs, and philosophies constrain the way things are done (Harrington & Ferguson, 2001). They furthermore include a region's location vis-à-vis other regions, the age of its capital stock, its industrial mix, cyclic trends in the economy[8] and variations over time and space in the effectiveness with which regional governments successfully use instruments of industrial policy and finance to effectively implement regional growth strategies (Amsden, 1989; Johnson, 1982; Macintyre, 1994; Thompson, 1998; Wade, 1990).

What gives evolutionary systems theory a singular position in explaining how universities effectuate endogenous regional economic growth and development is that it does not rely upon direct measurement and empirical tests, but rather upon broad experience, reason, coherence with theory and observation. That is, it provides a fertile scheme of explanation that starts with widely shared experience at performing acts of human choice, and proceeds to focus on the effects of these acts in terms of deep, long logical chains of systematic reasoning about the dynamics the knowledge base. Moreover, it ultimately ends up with endogenous regional growth and development. In this respect it is both strongly supported by reason and broad experience and theoretically coherent.

While the basic theoretical framework as such cannot be established with anything like deductive certainty from postulates laid down from outside evolutionary systems theory, and while it is not open in any comprehensive way to conclusive verification or falsification on the grounds of experimental or quasi-experimental design, testable hypotheses addressing more or less definite and limited aspects of it may nevertheless be deduced from it and tested. For instance, one may deduce a hypothesis that the levels of advancement of knowledge and utilization initiated from within a university will decrease as the levels of ambiguity about the university's mission or purpose increases. Similarly, one may deduce that the levels of the advancement of knowledge and utilization initiated within a university will increase as the resource base of the university increases. Other such hypotheses include the following: (1) the rate of advancement of knowledge and utilization initiated from within a university will decrease as the time/energy cost of inquiry within the university increases, (2) the rate of advancement of knowledge and utilization initiated from within a university will decrease as the cost of organizational change at the university increases, (3) the rate of advancement of knowledge and utilization initiated from within a university will increase with very low or very high probabilities of change in the larger social and environmental mileau of which it is a part, (4) the rate of innovation and adoption initiated from within a university will increase with a very low or very high magnitude of change in the larger social and environmental mileau of which it is a part.

Universities' Contributions to Endogenous Regional Economic Growth and Development

According to the economic logic of the endogenous growth model, public policy makers seeking to stimulate long-run regional economic growth and development should invest in augmentation and improvement of the region's knowledge base. Indeed, on the basis of this model, enhancements in knowledge are the *only* long-run source of economic growth and development. That is, in the short-run, increases in capital investment and the size of the labor force will help a region to grow and develop economically, and will do so independently of the knowledge base. But eventually diminishing marginal returns will make further capital investments or increases in the labor force unproductive. At the point at which the marginal returns to capital and labor is equal to investment, further increases in capital or labor yield no additional output and capital and labor are, in effect, held constant. Thus, without further knowledge there can be no further regional economic growth or development. After further increases in capital or labor yield no more increases in output, knowledge remains the only factor that determines long-run economic growth and development. The question for public policy makers seeking to stimulate endogenous regional economic growth and development, then, is how to most effectively and reliably increase the rate at which the knowledge base within the region advances.

According to the evolutionary systems theoretic perspective, knowledge advances in proportion to the breadth and depth of the supply of competing ideas through which blind variation operates. Thus, arguably, in turn, the way for public policy makers to stimulate regional economic growth and development is in no small measure to provide incentives to encourage the "creative class" (Florida, 2002). This may be effectively done by identifying, relaxing and, if feasible, completely removing whatever conceptual, personal and behavioral constraints limit the conditions optimally conducive to the effective operation of blind variation and selective retention. This puts a premium on educational programs designed to improve the quality of human thought, knowledge, and knowledge utilization (Warfield, 1989, Warfield 1990). Besides making investments in support of general education, this implies augmenting investments in broad human capital accumulation strategies that emphasize such factors as leadership development, innovation, creative thinking, entrepreneurship, ethnic diversity, the production and maintenance of learning communities and social capital, labor force development, and environmentally-oriented education.[9]

In this view, advances in knowledge are also critically dependent upon vicarious selection. This puts a premium upon such educational policies as utilization of high academic standards, efforts to combat grade inflation, and the practice of careful, honest, open-minded and thorough evaluation of knowledge claims both in terms of student examinations and the peer-review process for research.

Efforts to remove binding situational constraints upon the effective operation of blind variation and selective retention may at some universities include enhancements in the vigilance with which efforts are made to ensure and respect academic freedom, as well as increases in the level of tolerance for nonconforming behaviors, individual differences, and expressions of dissent. The augmentation of unrestricted funds is also a key element for progress at many universities, and if they are to meet society's demand for new knowledge then somehow society must make the requisite investments.

The personal factors that constrain blind variation and selective retention may be altered in some extent by the installment of proven academic leadership with a longstanding history of commitment to education; by honest recognition that some individuals have little if any love of learning or natural curiosity (and therefore are more suited for other pursuits than intellectually-oriented teaching or learning); and by implementing merit-oriented principles designed to restrict participation in higher education to only those individuals who have demonstrated that they possess the knowledge, skills and abilities required to participate competently.

The means for relaxation of constraints imposed by methodological factors includes an increase in the number of and support for interdisciplinary programs and environmental education, as well as, in many cases, changes in the current institutional structure of the academy. One attention-grabbing example of this sort of change was suggested by Bartley (1990)—move the field of epistemology out of departments of philosophy and sociology and into departments of economics, where knowledge will get treated as a form of wealth rather than as a mere abstraction.

Finally, while efforts to achieve endogenous economic growth and development through enhancements in the rate of growth of a region's knowledge base are not nearly as direct or readily measurable as are those oriented toward productivity enhancements, they are nevertheless for several reasons worthy of the utmost in serious consideration. First, they are consistent with new economic growth theory, and specifically with the endogenous growth model. Indeed, the implication that knowledge is the only long-run source of regional economic growth and development is consistent with Boorstin's (1983) historical observation that knowledge is the primary factor distinguishing human societies today from those of the Stone Age. Second, blind variation and selective retention provide a mechanism with which to link educational policies and practices in and about universities, the advancement of knowledge, and regional economic growth and development. Accordingly, efforts to achieve endogenous economic growth and development through broad human capital accumulation strategies may be rooted in a conceptual and theoretical framework that carefully and systematically integrates the epistemological and psychological problems of human choice into prescriptions for the educational means to be applied for the attainment of endogenous regional economic growth and development. Third, the underlying model of blind variation and selective retention is seemingly plausible, parsimonious and informative. Fourth, the theoretical framework leads to clearly delineated actions regarding the relaxation of definite conceptual, personal, and behavioral constraints on inquiry in universities and elsewhere, all of which are likely to effectuate increases in knowledge. Fifth, this view yields a basis for refutation that is as solid as—and is in many ways akin to—the basis for refutation of the biological theory of evolution. Sixth, the final conclusions cohere with a more general belief that knowledge is a vital force of massive significance upon which rests not only progress toward economic growth and development, but in no small measure the destiny of civilization.

Evolutionary Systems and the Choice between Educational Policy Alternatives

As might be expected at a time of increasingly frequent reference to the knowledge economy, the newly formulated endogenous growth models treat knowledge as an explicit and independent cause of regional economic growth and development. These models nevertheless remain incomplete in that they do not systematically integrate any explicit reference to a nexus of considerations about the origins and dynamics of knowledge, or about the specific constraints that bind upon a region's knowledge base and keep it from being enlarged and improved. Thus, if these models are to be made coherent, they must be subsumed within a higher level theory—such as evolutionary systems theory—that systematically and explicitly addresses these constraints and renders them meaningful as a basis for choosing between alternative feasible courses of action.

There is thus a clear role for the evolutionary systems theory of knowledge in helping to provide an intellectual discipline for guiding choices between educational policy alternatives. This theory helps to explain the sources of new knowledge, as well as the conditions under which such knowledge is most apt to arise. It also helps explain the dynamics of the processes through which new ideas, once stipulated, prove themselves to be viable and effective or not. As a consequence, when the endogenous regional growth and development models are subsumed within evolutionary systems theory, the integrity of these models as components of a large body of coherent knowledge becomes feasible. Of particular importance is that this serves the purpose of providing deeply logical and systematic guidance that is at once coherent and useful in choosing between educational policy alternatives.

Other theories besides evolutionary systems theory may in principle be formulated and used to frame the endogenous growth models so as to obtain guidance in terms of to making investments in, providing incentives for and/or organizing universities to serve the ends of regional economic development. However, unless some such theory is available to serve this purpose, the door is left open for anyone with vested interest to invent and espouse any situational guidance in any

manner that serves their particular political or economic ambitions, no matter how ill conceived, arbitrary, short-sighted or narrowly self-serving they may be.

End Notes

[1] The "endogenous" growth model is predicated upon recognition that some regional economic growth originates from within and is caused by factors and forces from within a region. It is usually contrasted with the "exogenous growth" model which is predicated on the more traditional and long-standing view that regional economic growth originates from and is caused from without, by an increase in demand from outside the region for the products produced within the region. This latter view is rooted in export base theory which, in turn, has been the dominant view of regional economic development in the United States for at least several decades. Exogenous growth models lead to economic development strategies such as increasing regional exports, and "smoke-stack chasing."

[2] Assuming constant returns to scale and a standard economic production function (technically known as a Cobb-Douglas function), the conventional exogenous growth may be stated as follows:

$$Y = Ae^{gt}K^{\alpha}L^{1-\alpha} \quad (1)$$

where Y is economic output, A is knowledge, g is the constant rate of technical progress per time period, t, K is the stock of capital, L is the labor force, and α is a "constant returns to scale" parameter estimated, usually, by regression analysis. Note that in this formulation, while knowledge is nominally represented as an explicit determinant of output, on strict interpretation it enters the model as the mean effect on output of all the excluded variables rather than as an explicit independent variable. The residual term in this model—the Solow residual—thus accounts for increases in economic output and enables theorists to theorize that knowledge has an influence on regional output and yet to do so in a way that preempts any demands for a phenomenological theory of knowledge growth with which to explain the processes by which it advances.

[3] "Labor productivity" refers to regional output per unit of labor input. It may be measured by variables such as aggregate regional output (e.g., gross regional product) divided by the size of the region's labor force. Measures of labor productivity for various regions within the United States may be found at the Bureau of Labor Statistics in the U.S. Department of Labor.

[4] The endogenous growth model represents economic growth in a new way that can be formally represented as:

$$Y = K^{\alpha}(AL)^{1-\alpha} \quad (2)$$

where, as before, Y is output, K is the stock of capital, L is the labor force, A is knowledge, and α is a "constant returns to scale" parameter. Note that in this formulation knowledge no longer enters the model in a merely nominal way as a residual, but rather it is formally and explicitly represented as an independent determinant of output. Thus, by making knowledge an explicit and independent determinant of economic output, knowledge becomes a phenomenon in its own right. Moreover, once it is acknowledged that knowledge is a phenomenon in its own right, coherence demands a phenomenological theory with which to explain the causal processes through which the advancement of knowledge effectuates economic growth and development. That is, explanation of the processes through which the advancement of knowledge effectuates economic growth and development is required specifically because unless there is a phenomenological theory with which to conceptualize it, the model stipulates a variable that, upon questioning, cannot be included in a wider conceptual framework.

[5] The idea of justice, for instance, has retained a relatively stable structure—specifically with reference to the properties and attributes that characterize a morally good person and the elements or instances of his or her rightful conduct—for many centuries. Nevertheless it has changed with time from an earlier orientation toward "an eye for an eye" to a more recent one that tends to be much more integrally related to human rights and the use of reason.

[6] Bartley (1987) describes the element of vicariousness as follows:

> Take radar as an analogy. Radar is used, by a ship, for instance, as a *substitute* for movement, i.e., going and looking directly. Instead of exploring its environment directly, with all the attending risks, the ship sends out radar and perhaps also sonar. The radar beam is emitted blindly, and is selectively reflected from objects, their opaqueness to the wave band vicariously representing their impenetrability. Trial and error is thus removed from the full movement on the part of the organism and is vicariously invested in the radar beam. Similarly with vision, wherein an environment far beyond the range of probing touch can be represented vicariously in the image in the visual cortex. This image may be utilized in a vicarious trial and error search or consideration of potential movements, and itself works as an error-eliminating control over movement. Successful movements in thought may be put into *overt* movement. (p. 32)

Selectors that are a part of any cognitive structure are, in this sense, vicarious.

[7] For instance, nobody at the time Guttenberg first obtained knowledge about movable type could have predicted the future growth of knowledge that that particular knowledge enabled. Similarly, today the future path of knowledge growth that will be enabled by the invention of the computer chip is probably unpredictable.

[8] Examples include business cycles, Cuznets cycles, and Kondratiev waves.

[9] The relevant constraints arguably include those that create powerful tendencies for universities to turn into centers for vocationalism (Nobel, 2002), cultural warfare and political correctness (Bowen & Schwartz, 2005), the perpetuation of epistemopathologies (Bartley, 1990; Silber, 1989), and stratification by social class (Economist, 2005).

References

Amsden, A. (1989). *Asia's next giant: South Korea and late industrialization.* New York: Oxford University Press.

Anselin, L., Attila V., & Zoltan A. (2000). Geographical and sectoral characteristics of academic knowledge externalities. *Papers in Regional Science*, *79*, 435-443.

Anselin, L., Attila, V. & Zoltan, A. (2000a). Local geographical spillovers between university research and high technology innovations. *Journal of Urban Economics*, *42*, 422-448.

Anselin, L., Attila V., & Zoltan A. (2000b). Geographical spillovers and university research: A spatial econometric perspective. *Growth and Change*, *31*, 501-515.

Armstrong, H. & Taylor, J. (2000). *Regional economics and policy* (3rd ed.). Oxford, UK: Blackwell Publishers.

Ashby, W. R. (1952). *Design for a brain*. New York: Wiley (as cited in Campbell, 1960).

Bartley, W. W., III (1990). *Unfathomed knowledge, unmeasured wealth: On universities and the wealth of nations.* La Salle: IL: Open Court.

Bartley, W. W., III (1987). Philosophy of biology vs. philosophy of physics. In G. Radnitzky & W. W. Bartley, III (Eds.), *Evolutionary epistemology, rationality, and the sociology of knowledge* (pp. 7-40). La Salle, IL: Open Court.

Boorstin, D. J. (1983). *The discoverers: A history of man's search to know his world and himself.* New York: Random House.

Bowen, W. M., & Schwartz. M. (2005). *The chief purpose of universities: Academic discourse and the diversity of ideas*. Lewiston, NY: Edwin Mellen Press.

Borts, G. H., & Stein, J. L. (1964). *Economic growth in a free market*. New York: Columbia University Press.

Boyd, R., & Richerson, P. J. (1985). *Culture and the evolutionary process*. Chicago: Chicago University Press.

Campbell, D. T. (1960). Blind variation and selective retention in creative thought as in other knowledge processes. *Psychological Review*, *67*(6), 380-400.

Campbell, D. T. (1987). Evolutionary epistemology. In G. Radnitzky & W. W. Bartley, III (Eds.) *Evolutionary epistemology, rationality, and the sociology of knowledge* (pp. 47-89). La Salle, IL: Open Court.

Csanyi, V. (1991). *Evolutionary systems and society: A general theory*. Durham, NC: Duke University Press.

Cziko, G. A., & Campbell, D. T. (1990). Comprehensive evolutionary epistemology bibliography. *The Journal of Social and Biological Sciences*, *13*(1), 41-81.

Ever Higher Society, Ever Harder to Ascend (2005, January 1-7). *The Economist*, 22-24.

Feldman, M. P. (1994). The university and economic development: The case of Johns Hopkins University and Baltimore. *Economic Development Quarterly*, *8*(1), 67-76.

Florida, R. (2002). *The rise of the creative class: And how it's transforming work, leisure, community and everyday life*. New York: Basic Books.

Harringon, J. W., Jr., & Ferguson, D. (2001). Social processes, and regional economic development. In B. Johansson, C. Karlsson, & R. R. Stough (Eds.), *Theories of endogenous regional growth: Lessons for regional policies* (pp. 49-76). Berlin: Springer-Verlag.

Heylighen, F. (2000). Introduction to principia cybernetica. In F. Heylighen, C. Joslyn, & V. Turchin (Eds.), *Principia Cybernetica Web* (Principia Cybernetica, Brussels). Retrieved from http://pespmc1.vub.ac.be/INTRO.html

Heylighen, F. (1997). Objective, subjective and intersubjective selectors of knowledge. *Evolution and Cognition*, *3*(1), 63-67.

Heylighen, F. (1995). Vicarious selection. In F. Heylighen, C. Joslyn, & V. Turchin (Eds.), *Principia cybernetica web* (Principia Cybernetica, Brussels). Retrieved from http://pespmc1.vub.ac.be/VICARSEL.html

Heylighen, F. (1993). Blind variation and selective retention. In F. Heylighen, C. Joslyn, & V. Turchin (Eds.), *Principia cybernetica web* (Principia Cybernetica, Brussels). Retrieved from http://pespmc1.vub.ac.be/BVSR.html

Heylighen, F. (1992). Principles of systems and cybernetics: An evolutionary perspective. In R. Trappl (Ed.), *Cybernetics and Systems* (pp. 3-10). Singapore: World Science.

Heylighen, F. (1991). The principle of blind variation. In F. Heylighen, C. Joslyn, & V. Turchin (Eds.), *Principia cybernetica web* (Principia Cybernetica, Brussels). Retrieved from http://pespmc1.vub.ac.be/BLINDVAR.html

Heylighen, F. (1991a). The principle of selective retention. In F. Heylighen, C. Joslyn, & V. Turchin (Eds.), *Principia cybernetica web* (Principia Cybernetica, Brussels). Retrieved from http://pespmc1.vub.ac.be/SELRET.html

Jaffee, A. (1989). Real effects of academic research. *The American Economic Review*, *79*(5), 957-970.

Johnson, C. (1982). *MITI and the Japanese economic miracle.* Stanford, CA: Stanford University Press.

Kincaid, H. (1995). Assessing functional explanations in the social sciences. In M. Martin & L. C. McIntyre (Eds.), *Readings in the philosophy of social science* (pp. 415-428). Cambridge, MA: The MIT Press.

Lumsden, C., & Wilson, E. (1981). *Genes, mind, and culture: The coevolutionary process*. Cambridge, MA: Harvard University Press.

Lynch, A. (1997). Units, events, and dynamics in memetic evolution, *Journal of Memetics*, *2*(1), retrieved from http://cfpm.org/jom-emit/1998/vol2/lynch_a.html

MacIntyre, A. (Ed.). (1994). *Business and government in industrialising Asia.* Ithaca, NY: Cornell University Press.

Mathur, V. K. (1999). Human capital-based strategy for regional economic development. *Economic Development Quarterly*, *13*(3), 203-216.

Noble, D. F. (2002). *Digital diploma mills: The automation of higher education*. New York: Monthly Review Press.

Popper, K. R. (1991). *The poverty of historicism*. London: Routledge.

Popper, K. R. (1963). *Conjectures and refutations: The growth of scientific knowledge* (2nd ed.). New York: Basic Books.

Radnitzky, G., & Bartley, W. W., III (Eds.). (1987). *Evolutionary epistemology, rationality, and the sociology of knowledge.* La Salle, IL: Open Court.

Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economy*, *98*, 71-102.

Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of Political Economy*, *94*, 1002-1037.

Rupasingha, A., Goetz, S. J., & Freshwater, D. (2002). Social and institutional determinants of economic growth: Evidence from the United States counties. *Papers in Regional Science*, *81*, 139-155.

Silber, J. (1990). *Straight shooting: What's wrong with American and how to fix it*. New York: Harper and Row Publishers.

Stough, R. R. (2001). Endogenous growth theory and the role of institutions in regional economic development. In B. Johansson, C. Karlsson, & R. Stough (Eds.), *Theories of endogenous regional growth: Lessons for regional policies* (pp. 17-48). Berlin: Springer-Verlag.

Thanki, R. (1999). How do we know the value of higher education to regional development? *Regional Studies*, *33*(1), 84-89.

Thompson, G. (Ed.) (1998). *Economic dynamism in the Asia-Pacific: The growth of integration and competitiveness*. London, Routledge.

Von Bertalanffy, L. (1952). *Problems of life: An evaluation of modern biological and scientific thought* (p. 11). New York: Harper and Brothers.

Wade, R. (1990). *Governing the market: Economic theory and the role of government in East Asian industrialization.* Princeton, NJ: Princeton University Press.

Warfield, J. N. (1990). *A science of generic design*. Salinas, CA: Intersystems Publications.

Warfield, J. N. (1989). *Societal systems: Planning, policy, and complexity*. Salinas, CA: Intersystems Publishers.

The Mid-Western Educational Research Association

A gift membership has been given to you, _____

by_____

Your name is now included as a member of one of the most recognized, well-respected educational research groups in the United States and Canada. Your one-year membership includes a subscription to the *Mid-Western Educational Researcher,* the association's journal. Members pay reduced registration fees for the annual meeting held in October. The conference attracts many nationally-recognized leaders in educational research. Enjoy your membership!

Gift Membership Gift Membership Gift Membership Gift Membership

---

Gift Membership Gift Membership Gift Membership Gift Membership

Thank you for providing your colleague, student, or friend with a special one-year gift membership to the Mid-Western Educational Research Association. It is a gift of professional involvement that is sure to be appreciated throughout the year. To give your gift membership, fill out the top portion of this card and use it to inform the recipient of the gift membership. Fill out the bottom portion and mail it with your check to: Jean Pierce – LEPF Dept. – Northern Illinois U – DeKalb, IL 60115

	Person Receiving Gift Membership	**Person Giving Gift Membership**
Name	_____	_____
Address	_____	_____
	_____	_____
	_____	_____
Affiliation	_____	_____
Work Phone	_____	_____
Home Phone	_____	_____
E-mail	_____	_____
Fax	_____	_____
Division preference (optional)	_____	_____

Make your check payable to MWERA.
Professional Membership—Enclose a check for $45
Student Membership—Enclose a check for $25

THE OHIO STATE UNIVERSITY

The Ohio State University
2500 Kenny Road
Columbus, Ohio 43210

Nonprofit Org.
U.S. Postage
PAID
Columbus, Ohio
Permit No. 711