

NCSALL Seminar Guide:

GED Research and Policy

December 2005



National Center for the Study of Adult Learning and Literacy

NCSALL Training Materials are funded by the Educational Research and Development Centers Program, Award Number R309B960002, as administered by the Institute of Education Sciences (formerly Office of Educational Research and Improvement), U.S. Department of Education, through contract to Harvard University. The content of *NCSALL Training Materials* does not necessarily represent the positions or policies of the Institute of Education Sciences, or the U.S. Department of Education, and you should not assume endorsement by the Federal Government.

GED Research and Policy

This seminar guide was created by the National Center for the Study of Adult Learning and Literacy (NCSALL) to introduce adult education practitioners to the research that has determined that GED students experience educational and financial gains when engaged in GED preparation courses that focus on cognitive development in addition to exam preparation and that provide support for transition to postsecondary education and training. Programs or professional developers may want to use this seminar in place of a regularly scheduled meeting, such as a statewide training or a local program staff meeting.

Objectives:

By the end of the seminar, participants will be able to:

- Summarize the research findings on the process of passing the GED and the economic benefits of attaining a GED credential
- Recommend policy that is written in response to the research findings

Participants: 8 to 12 practitioners who work in adult education—teachers, tutors, counselors, program administrators, policymakers, and others

Time: 3 hours






Agenda:

- | | |
|-------------------|--------------------------------------|
| <i>10 minutes</i> | 1. Welcome and Introductions |
| <i>5 minutes</i> | 2. Objectives and Agenda |
| <i>60 minutes</i> | 3. Discussion of the Readings |
| <i>15 minutes</i> | Break |
| <i>65 minutes</i> | 4. Policy Proposals |
| <i>15 minutes</i> | 5. Planning Next Steps for the Group |
| <i>10 minutes</i> | 6. Evaluation of the Seminar |

Session Preparation:

This guide includes the information and materials needed to conduct the seminar: step-by-step instructions for the activities, approximate time for each activity, and notes and other ideas for conducting the activities. The readings and handout, ready for photocopying, are at the end of the guide.

Participants should receive the following readings at least 10 days before the seminar. Ask participants to read the articles, take notes, and write down their questions for sharing at the seminar.

-  **Fast Facts: The GED** (*Focus on Policy*, Volume 1, Issue 1, April 2003)
-  **The GED: Whom Does It Help?** by John H. Tyler (*Focus on Basics*, Volume 2, Issue B, June 1998)
-  **Skills Matter in the Types of Jobs Young Dropouts Will First Hold** by John H. Tyler (*Focus on Basics*, Volume 7, Issue A, June 2004)
-  **What Are the Economic Effects of Earning a GED in Prison?** by Barbara Garner (*Focus on Basics*, Volume 7, Issue D, September 2005)
-  **The Process of Passing the GED** by Barbara Garner (*Focus on Basics*, Volume 2, Issue B, June 1998)

The facilitator should read the articles, study the seminar steps, and prepare the materials on the following list.



Newsprints (Prepare ahead of time.)

- ___ Objectives and Agenda (p. 6)
- ___ Discussion Questions (p. 8)
- ___ Next Steps (p. 10)
- ___ Useful/How to Improve (p. 11)



Handout (Make copies for each participant.)

- ___ *Letter to the Editor*



Readings (Have two or three extra copies available for participants who forget to bring them.)

- ___ **Fast Facts: The GED**
- ___ **The GED: Whom Does It Help?**
- ___ **Skills Matter in the Types of Jobs Young Dropouts Will First Hold**
- ___ **What Are the Economic Effects of Earning a GED in Prison?**
- ___ **The Process of Passing the GED**

Materials

- ___ Newsprint easel and blank sheets of newsprint
- ___ Markers, pens, tape
- ___ Sticky dots

Steps:

1. Welcome and Introductions


(10 minutes)

- **Welcome participants** to the seminar. **Introduce yourself** and state your role as facilitator. Explain how you came to facilitate this seminar and who is sponsoring it.
- **Ask participants to introduce themselves** (name, program, and role).
- **Make sure that participants know** where bathrooms are located, when the session will end, when the break will be, and any other housekeeping information.

Note to Facilitator
Since time is very tight, it's important to move participants along gently but firmly if they are exceeding their time limit for introductions.

2. Objectives and Agenda

(5 minutes)

-  **Post the newsprint Objectives and Agenda** and review the objectives and steps with the participants.

Objectives

By the end of the seminar, you will be able to:


- Summarize the research findings on the process of passing the GED and the economic benefits of attaining a GED credential
- Recommend policy that is written in response to the research findings

Agenda

1. Welcome and Introductions (Done!)
2. Objectives and Agenda (Doing)
3. Discussion of the Readings
4. Policy Proposals
5. Planning Next Steps for the Group
6. Evaluation of the Seminar

3. Discussion of the Readings

(60 minutes)

-  **Explain to participants that in this activity they will be using the articles that they were asked to read in advance of this session.**

[Note to facilitator: **Fast Facts: The GED** provides a brief, factual overview of the structure of the GED.

The GED: Whom Does It Help? summarizes research findings that determined that when young (ages 16-21), white dropouts pass the General Educational Development (GED) exam with marginal scores, they experience a substantial increase in earnings. These findings contrast with many other studies that determine little economic impact. Tyler proposes that passing the GED serves as a sign of higher maturity, motivation, and commitment to work to potential employers. A similar effect for minorities was not observed. Because the average earnings of young, GED graduates are low to begin with, Tyler argues that this increase is not enough for them to move out of poverty. The author suggests that future research consider the impact of the GED on populations according to gender, age, cultural/racial background, and scores.

Skills Matter in the Types of Jobs Young Dropouts Will First Hold.


Using data on General Educational Development (GED) candidates who attempted the GED exams in Florida between 1995 and 1998, when all were 16 to 18 years of age, NCSALL researcher John Tyler found that young dropouts do experience a nontrivial economic return on basic cognitive skills in their first jobs in the labor market. Based on earnings in the first three years after taking the GED exams, dropouts who score a standard deviation higher on the GED math exams can expect earnings 6.5 percent higher than those with lower scores.

In What Are the Economic Effects of Earning a GED in Prison?

NCSALL researcher John Tyler finds among racial and ethnic minority offenders—primarily African-Americans, with a smaller number of Hispanics—a 20 percent increase in the earnings among GED holders relative to non-GED holders in the first post-release year. That transition year is crucial, so this is good news. However, these effects diminish over time and are not found for white ex-offenders.


In **The Process of Passing the GED**, the author provides an overview of research conducted by John Tyler that considers which GED tests cause the most difficulty, for whom the option of retesting is

significant, and who is the most affected by raised passing scores. Tyler finds that women experienced the most difficulty passing the math exam while the writing exam causes problems for men. African Americans also have difficulty with the math exam and benefited from the retesting option.]

-  **Post the newsprint Discussion Questions.** Ask participants to share their comments and questions from the readings, and then lead a 40-minute, general discussion of the articles using the following discussion questions as a guide.

Discussion Questions

- What were the key points of these articles?
- What evidence did they give to back up the findings?
- What were the strengths and weaknesses of this evidence?
- Which of the findings or practices did you find surprising or intriguing? Why?
- How might the findings or practices in these articles be applicable to your context?
- What questions might you like to ask the researcher, John Tyler, about his research?

-  **Distribute the handout *Letter to the Editor* and ask participants to take 5 minutes to silently read** the letter by Tyler to determine whether or not their questions and/or concerns were addressed.

[Note to facilitator: In response to criticism and issues raised in response to his article, “The GED: Whom Does It Help? Results from a New Approach to Studying the Economic Benefits of the GED” (*Focus on Basics*, Volume 2, Issue B, June 1998), Tyler clarifies what his research explains about the impact of GED credentials on the earnings of young, white dropouts, ages 21-26, who passed the test with minimal requirements but not on the earnings of young, minority youth with similar scores. With the data collected, Tyler cannot establish employer discrimination as a factor, but states that this possibility warrants closer examination. Tyler notes that some research indicates that minority dropouts are employed and financially

rewarded in jobs where skills matter. Due to the design of data collection for GED candidates, he explains that his data is limited to two categories, white and minority.]

- **Reconvene the large group and facilitate a 10-minute discussion,** using the following questions as a guide:

? *How do your experiences confirm or challenge Tyler's findings?*

? *What questions do you still have about the research?*

Break (15 minutes)


4. Policy Proposals

(65 minutes)

- **Explain to participants that in this activity they will respond** to the GED research by drafting policy proposals. Ask the participants to form three small groups. Assign the role of policymakers to one group, program directors to another group, and practitioners to the third. (These groups could be formed according to participants' actual roles.)
- **Ask the small groups to write policy in response to Tyler's findings.** Give the groups 20 minutes to draft the policies and prepare to present and defend them. The policymaker group addresses state policy; the program director group addresses program policy; and the practitioner group focuses on instructional policy.
- **Reconvene the whole group.** Ask the small groups to share their policy proposals. After each group presents, encourage the rest of the participants, the "public," to raise objections to and questions about the policy. Allow the "policymakers" to defend their proposals based on the research. Take about 15 minutes for each group to share and defend their policy proposal.

5. Planning Next Steps for the Group

(15 minutes)

-  **Post the newsprint Next Steps.** Ask the participants to think about how these policy ideas could be shared with other practitioners? Is there a state newsletter in which they could be published? Could they be sent to the state literacy resource center for forwarding to the next study circle held? Could they each take the ideas back to their own programs to discuss at a staff meeting?

Next Steps

- How might you share your ideas with others, or how might you ask each other questions?

- **Write the next steps** on the newsprint as the participants mention them. After five minutes of brainstorming, ask participants to silently look at the options and decide on two that they think are priorities.
- **Hand a sticky dot to each participant** and ask the group to put their dots next to the idea that they would most like the group to do. If they don't want to do any of the activities, they should not put their dots on the newsprint.
- **Lead the group in organizing its choice. For example:**
 - If they choose to submit an article to the state newsletter, determine who will take the responsibility for doing it.
 - If they choose to organize an e-mail list, pass around a sheet for everyone to list their e-mail addresses. Decide who is going to start the first posting, and discuss what types of discussion or postings people would like to see (e.g., asking questions about adopting the policy, describing what happened after they implemented it, sharing other resources, etc.).

6. Evaluation of the Seminar

(10 minutes)

- **Explain to participants that, in the time left, you would like to get feedback from them about this seminar.** You will use this feedback in shaping future seminars.

-  **Post the newsprint Useful/How to Improve.**

<u>Useful</u>	<u>How to Improve</u>

Ask participants first to tell you what was useful or helpful to them about the design and content of this seminar. Write their comments, without response from you, on the newsprint under “Useful.”

- **Then ask participants for suggestions on how to improve this design and content.** Write their comments, without response from you, on the newsprint under “How to Improve.” If anyone makes a negative comment that’s not in the form of a suggestion, ask the person to rephrase it as a suggestion for improvement, and then write the suggestion on the newsprint.
- **Do not make any response to participants’ comments during this evaluation.** It is very important for you not to defend or justify anything you have done in the seminar or anything about the design or content, as this will discourage further suggestions. If anyone makes a suggestion you don’t agree with, just nod your head. If you feel some response is needed, rephrase their concern: “So you feel that what we should do instead of the small-group discussion is . . . ? Is that right?”
- **Refer participants to the National Center for the Study of Adult Learning and Literacy Web site (www.ncsall.net) for further information.** Point out that most NCSALL publications may be downloaded for free from the Web site. Print versions can be ordered by contacting NCSALL at World Education: ncsall@worlded.org.
- **Thank everyone** for coming and participating in the seminar.

Reading 

(To be read by participants *before* the session.)

Fast Facts: The GED

Focus on Policy, Volume 1, Issue 1, April 2003, p. 2

- The GED (General Educational Development) consists of a battery of five tests, and takes just under eight hours to complete. Four of the five tests are multiple choice, covering mathematics, social studies, science, and interpretation of literature. The fifth test requires writing an essay. The GED tests measure communication, information processing, problem-solving, and critical thinking skills.
- The American Council of Education (ACE) produces and administers the GED tests, and the ACE's Commission on Educational Credit and Credentials sets minimum passing scores. Each state education agency is free to set higher passing standards.
- Passing scores for the GED test battery are set a level above that achieved by one-third of traditional high school graduates given the test.
- The GED program was started in 1942 as a means to certify that returning veterans who lacked a high school diploma had sufficient skills to take advantage of the postsecondary education benefits provided by the G.I. Bill. Five years later, the state of New York allowed high school dropouts who were not veterans to seek the GED credential, and other states soon followed.
- In the U.S., a total of more than 15 million people have earned a GED, about one in seven high school credentials earned is now a GED, and 655,514 GEDs were awarded in the U.S. last year.¹

Source: American Council on Education

¹ In the U.S., at total of more than 15.4 million people have earned a GED, and 603,019 GEDs were awarded in 2002.

Source: American Council on Education

Reading 

(To be read by participants *before* the session.)

The GED: Whom Does It Help?

by John H. Tyler

Focus on Basics, Volume 2, Issue B, June 1998, pp. 1, 3-6

Results from a new approach to studying the economic benefits of the GED

Does acquiring the GED increase the earnings of drop outs? At least 13 different studies in the last decade have examined aspects of this question. Not one of these studies, however, was really able to separate the impact of the credential from the contributions that unobservable factors inherent in GED holders, such as motivation, might make. A quirk of policy enabled me and my colleagues at the Harvard Graduate School of Education, Richard J. Murnane and John B. Willett, to develop a unique approach to looking at this question. Our results differ considerably from those of our colleagues. We found that, unlike almost all previous studies, at least for young white drop outs, acquisition of a credential of General Educational Development (GED) can have a substantial impact on earnings.

Previous research into the economic benefits of the GED points to relatively inconsequential increases in hourly wages, annual earnings, or employment for GED holders relative to drop outs without a GED. In contrast, our study shows that young white GED holders receive a large boost in annual earnings if they acquire a GED. Our treatment group was drop outs age 16 to 21 who passed the GED with scores that were at or just above passing: what could be described as on the margin of passing. Our comparison group was drop outs age 16 to 21 who had the same marginal scores on the GED but, because of different passing requirements in their states, did not receive the credential. When we compare our treatment and comparison groups, we find that the annual earnings of the white treatment group of GED holders, five years after they received the credential, are ten to 20 percent higher than the annual earnings of the comparison group of drop outs who do not possess a GED. This is a very large percentage increase, but it represents an increase in annual earnings of only about \$1,500, leaving the clear message that the GED cannot be counted upon as a sole ticket out of poverty.

We were able to conduct separate analyses for white and nonwhite drop outs, and we find no statistically significant differences between the annual earnings of the treatment and comparison groups of nonwhite drop outs. I

will discuss this rather surprising and distressing finding later and offer possible explanations.

Different Methodology

As I stated above, these findings come from a study that uses a different methodology than has previously been employed in GED-related research. GED holders are a self-selected, rather than random, group. Given this, failure to account for factors that may cause some drop outs to pursue a GED while other, seemingly similar, drop outs do not results in estimates biased away from the truth. For example, if it is the most motivated drop outs who tend to pursue the GED, then failure to account for this will overstate the effect of the GED on drop outs. Our methodology accounts for this self-selection bias by starting with a data set of drop outs who have all chosen to attempt a GED. We then use the fact that different states have different GED passing standards to compare drop outs who have the same GED exam scores, but who do or do not have a GED depending on the state in which they attempted the exams.

With this methodology, our treatment group individuals with a GED is composed of drop outs who are on the margin of passing, but have a GED because they are in a state with a lower passing standard. Meanwhile, our comparison group individuals without a GED is composed of drop outs who are on the margin of passing, but who do not have a GED because they are in a state with a higher passing standard. We are able to account for the fact that our treatment and comparison individuals come from different states and these states may have different labor markets, cost of living, etc.

Data

The data we used to conduct this study are also unique to GED-related research. Past research relied on data sets such as High School and Beyond or the National Longitudinal Study of Youth, which do not have details on GED scores or attempts at passing. Our data were supplied by the GED Testing Service and the state Education Departments in Connecticut, New York, and Florida. These data contain basic demographic information and critical to our methodology GED test scores for drop outs who were age 16 to 21 in 1990, the year they last attempted the GED exams. We have data from most, but not all, states on these 1990 GED candidates. Notice that everyone in our data, passers as well as non-passers, has selected themselves into the pool of drop outs who would like to have a GED, as indicated by the fact that they attempted the battery of GED exams. To obtain an outcome measure, we worked with programmers at the Social Security Administration (SSA) to merge these GED data with SSA annual earnings data, yielding a data set containing basic demographic information (including states where the GED

was attempted), GED test scores, and annual Social Security-taxable earnings. To allow the GED time to take effect in the labor market, we measure annual earnings in 1995, five years after our sample last attempted the GED.

Interpretation

Understanding the mechanisms through which a GED might have an impact on the earnings of drop outs is necessary to interpret our results properly. There are three.

- If preparation for the GED tests tends to increase cognitive skills, and if we assume that higher levels of cognitive skills lead to increased earnings, then there is a human capital component to the GED.
- Many post-secondary education and training programs are denied to uncredentialed drop outs, but open to GED holders. To the extent that post-secondary education and training lead to increased earnings, then the GED's function as a gateway to these programs would result in higher earnings for GED holders.
- Gaining information about the future productivity potential of job applicants can be a difficult and expensive enterprise. Employers may value the GED as a signal of unobservable or costly to observe productive attributes. If so, then drop outs who use the GED to signal higher levels of motivation, maturity, commitment to work, or other productive attributes would tend to have higher earnings than drop outs who lacked the signal.

As a result of our research design, our estimates measure only the value of the GED as a labor market signal. Two factors lead us to this conclusion. First, since our treatment and comparison groups have the same GED test scores, the two groups are balanced on the human capital dimension: on average, the treatment and comparison groups have the same skill levels as measured by the GED exams. Thus, any observed differences in earnings cannot be the result of differences in underlying skills of the two groups; hence, there is no human capital component in our estimates of the effect of the GED on earnings.

Second, since other research we have conducted indicates that the lowest scoring GED holders those who make up our GED treatment group acquire very little post-secondary education or training, our estimates have essentially no gateway component. This leaves only labor market signaling as an explanation for the earnings differences we find between GED holders and uncredentialed drop outs. Thus, our results are correctly interpreted as the labor market signaling effect of the GED on the earnings

of young drop outs who choose to acquire a GED and whose skills place them on the margins of passing.

Limitations

This study has certain limitations that result from SSA confidentiality requirements and the methodology we employ. As a result of federal guidelines designed to protect the confidentiality of individuals, the data released to us by the SSA impose three constraints on our study. First, we have to group all individuals who are not white into a single category, thus destroying the ability to examine whether the GED affects the earnings of African-Americans, Hispanics, Asians, and other minority groups differently. We can only speak to the overall average effect of the GED on this nonwhite group. Second, we cannot explore potential gender differences in the effects of the GED on earnings. And third, we cannot examine the impact of the GED for older GED holders. In future work, using different data, we will be able to retain our methodology and explore these important racial-ethnic and gender issues.

Our methodology, which allows us to address heretofore intractable selectivity-bias issues, also imposes some limitations on what we can say. As a direct result of our methodology, we can do no more than speculate about the following questions that are important to a better understanding of how the GED works in the labor market:

- How large are the average human capital or gateway components of the GED?
- What is the effect of the GED on the earnings of the random drop out, a sample that includes drop outs who would never voluntarily select into the GED pool?
- What is the effect of the GED on higher scoring GED holders?

While it is important to point out the limitations to this study, a discussion of what we cannot say should not overshadow what we can say with this research. Namely, that we have very credible findings indicating that, at least for young white drop outs, there is a substantial payoff for individuals who chose to pursue acquiring a GED in 1990 and whose skills place them on the margin of passing.

Exploring Results

Given the interpretation of our results, we have to ask why employers would appear to value the GED as a signal of productive attributes for young,

relatively low-skilled white drop outs, but not value it as a signal of the potential productivity of similar nonwhite dropouts? One possible answer to this question is that for young nonwhite drop outs, employers may place a higher value on other signals, such as language or residential address, than on the GED signal. To be explicit, consider this hypothetical situation. Two young, nonwhite drop outs apply for the same entry level job. One has a GED, the other does not. All things observable to the employer being equal, we might expect the GED-holder to have an edge. In this example, however, I assume that all things are not equal. The GED-holder in this hypothetical situation speaks English as a second language (this is observable to the employer), and as a result the employer gives the job to the uncredentialed native speaker. This type of behavior on the part of employers could lead to the results we find. A parallel example would adhere for residential address.

Another (and not mutually exclusive) explanation for our different white / nonwhite results contrasts the signaling effect of the credential for two different types of GED holders. According to this hypothesis, some individuals actively seek to obtain a GED to convey a level of maturity or commitment to work, and some GED holders tend to acquire the credential primarily as a quasicompulsory' part of some larger program such as Job Training Partnership Act (JTPA) training programs, or Job Corps activities. It may be that the GED conveys very different information when garnered in these two different ways, with employers discounting the GED signal when it is coupled with public assistance programs. If this hypothesis were true, and if substantially more nonwhite than white GED holders obtained their credential in a quasi-compulsory manner, then this could explain our results. Our best estimates for the percentage of 1990-minted GED holders who may have acquired their credential in conjunction with a public assistance program are 44 percent for nonwhites and only 11 percent for whites. While these numbers do not prove the hypothesis, they at least work in a direction that lends credence to this explanation.

Finally, other work we have done suggests a third explanation (see page 22). Using data on GED candidates from Connecticut and Florida, we find that a substantially larger proportion of young white GED candidates pass on the first attempt than do African-American or Hispanic candidates. In these data, about 75 percent of white drop outs pass on the first attempt, while only about 60 percent of the Hispanic and 45 percent of the African-American candidates passed on the first attempt. We also find that regardless of race-ethnicity, about the same percentage of first-time failers attempt a second or third time. If we believe that some unknown proportion of these multiple-attempters would pass as the result of chance high scores, and that this proportion is the same across racial-ethnic groups, then the result would be a higher proportion of nonwhite candidates who have a GED as a result of chance, relative to

white drop outs. Furthermore, it is logical that most of these false positive GED holders (drop outs who have a GED as a result of chance high scores) have scores that place them in the margin-of-passing zone that we use to construct our treatment and comparison groups. Under this scenario, it is plausible that over time employers might tend to discount the signaling value of the GED for nonwhites whose skills are relatively low, which could explain the white-nonwhite differences we find in the data.

‘My’ Reality

A logical question is: How do these results fit my experience? The important point to keep in mind is that any one person’s particular experiences would only represent a tiny fraction of our data. That is, our estimates represent the average impact of the GED over the nation. This average could represent a world where the impact of the GED is about the same for everyone in the sample; it could represent a world where half of the individuals in the sample get a big boost out of the GED, while the other half get virtually no benefit; or, it could represent a world where there is a complete range of impacts associated with GED attainment. We can only present the average effect for young white drop outs and the average effect for young nonwhite drop outs. As a result, any one piece of anecdotal evidence as to how the GED works in someone’s community may or may not fit the story that our estimates present. This is the limitation of quantitative research: we cannot say what will happen to any one individual. This compares to the limitation of qualitative research, which is the inability to generalize findings to the population of interest. Thus, each type of research has its own strengths and weaknesses. Ideally, both types of research are used to inform policy and practice, keeping in mind what each can and cannot say.

Policy Implications

Our research finds that employers value and use the GED as a signal of skills and attitudes they consider to be important in jobs. The message for policy here is that, at least for young white drop outs, the GED is serving an important function for both employers and drop outs. It is a relatively easily accessible and inexpensive way for drop outs with certain attributes to signal to employers that they are a good employment risk. Put another way, in the absence of more complete information, using the GED as a signal is a cost-effective way for employers to choose among drop out job applicants. The puzzling lack of a signaling effect we find for young nonwhite GED holders is a critical question. We cannot provide further answers to this question with our current data, but we are already working to secure more appropriate data that will be used to address this line of inquiry.

Even for white drop outs, however, the elements of good news contained in our findings must be leavened with the fact that the large percentage effects we find translate into relatively small real earnings gains of only \$1,500 per year. Young GED holders have very low average annual earnings to start with, and so a \$1,500 per year increase appears as a large percentage gain. Thus, we should remember that while the GED can lead to important earnings gains, by itself the credential is not a route out of poverty.

About the Author

John H. Tyler is Assistant Professor of Education, Economics, and Public Policy at Brown University. He completed this work for NCSALL while finishing his doctorate at the Harvard Graduate School of Education. Tyler taught middle school mathematics for eight years.

Reading 

(To be read by participants *before* the session.)

Skills Matter in the Types of Jobs Young Dropouts Will First Hold

by John H. Tyler

Focus on Basics, Volume 7, Issue A, June 2004, pp. 16-18

Do basic cognitive skills matter for the least educated? They may not, if computerization of the workplace has "deskilled" the types of jobs in which young dropouts are first employed. This is, therefore, an empirical question that has received little attention and less systematic research. The ideal way to examine this question would be to begin with a pool of school dropouts, randomly assign individuals in this pool different levels of cognitive skills, and then follow them into the labor market to see if those with higher levels of cognitive skills were employed more and earned more than those with lower skill levels. To approximate this situation in a recent research study, I used data on General Educational Development (GED) candidates who attempted the GED exams in Florida between 1995 and 1998, when all were 16 to 18 years of age.

I used the scores of these individuals on the math portion of the GED battery as a measure of their basic cognitive skills. To score well on the GED math exam, you have to know basic math, you have to be able to read the problems, and you have to be able to follow basic instructions. These data are well suited for determining the economic importance of cognitive skills for dropouts for several reasons. First, the GED exams are a high-stakes test for these dropouts and so we think that individuals bring their best effort to the exams. As a result, test scores on the GED exams are likely a better measure of underlying cognitive skills than test scores on standardized tests with no stakes attached. Second, these data contain very recent labor market information on a large sample of dropouts. Following the dropouts for three years after they last tested on the GED, I observed earnings as recently as 1998 and 2001. Third, these data allow me to control at least partially for confounding factors that could limit what we can learn about the returns to skills. For example, if, in a random sample of dropouts, we see a dropout who has a higher test score earning more than a lower-scoring dropout, we do not know how much of the observed earnings premium is a result of higher cognitive skills and how much is a result of unobserved (to the researcher) factors correlated with both higher test scores and greater earnings.

Confounding Factors

Unobserved motivation is an example of such a confounding factor. If we assume that motivation is rewarded in the labor market and that more highly motivated individuals tend to score higher on a standardized test, then failure to control for motivation will lead to overestimates of the causal effect of cognitive skills on earnings. In the data I used for this study, all dropouts indicated a desire to obtain a GED and all had sat through the seven-plus hours of testing. It is thus likely that selection into the data set itself controls for some level of motivation. I used other variables in the data to control for other potential confounding factors as well. Finally, it is likely that earnings information taken from state administrative records, as were used in this study, are a more accurate measure of earnings than self-reported earnings. In summary, while not as good as true experimental data, the data on GED candidates offer several distinct advantages over typical survey data in answering this research question.

Using these data I found that young dropouts do experience a nontrivial economic return on basic cognitive skills in their first jobs in the labor market. Based on earnings in the first three years after taking the GED exams, dropouts who score a standard deviation higher on the GED math exams can expect earnings 6.5 percent higher than those with lower scores. (A standard deviation is a measure of how much spread—variation—there is in the data. We normally think of education interventions that can move test scores by a quarter of a standard deviation as fairly big effects.) This is the best evidence yet that basic cognitive skills, at least as represented by scores on a math exam, do matter in the types of entry level jobs that young dropouts first hold.

Implications

The implication of this finding is that public policies supporting skill-enhancing programs could have a positive impact on the economic outcomes of low-skilled individuals. One way to increase the cognitive skills of dropouts would be to keep them in school longer. However, no dropout prevention programs have, under rigorous evaluation, been proven to be able to do this consistently. The alternative is to focus on programs that could directly affect the cognitive skills of dropouts. The only program that has undergone a rigorous evaluation in this context is the federal Job Corps program. A randomized evaluation of Job Corps found that it increased the math skills of participants by a tenth of a standard deviation (Schochet et al., 2000). Since skill enhancement is only one component of Job Corps, and since the general pool of dropouts is less disadvantaged than the Job Corps-eligible pool, it is reasonable to expect that a program focused on skill-enhancement

could increase basic cognitive skills of the random dropout by something more than a tenth of standard deviation.

What if we could find or develop programs that could, on average, increase the basic cognitive skills of dropouts by as much as a quarter of a standard deviation? Based on a set of reasonable assumptions concerning interest rates, inflation rates, and productivity growth in the economy, the returns to skills I measured using Florida GED candidates mean that increasing the cognitive skills of a dropout by a quarter of standard deviation would result in an increased earnings stream over a lifetime worth between \$20,000 and \$40,000 if paid out in a lump sum today. This calculation does not factor in the personal and societal benefits such as better parenting skills, better health, and increased civic participation that would likely result from increased cognitive skills. Ignoring these other potentially large benefits, a program that could increase the basic cognitive skills of dropouts by a quarter of a standard deviation and that costs less than \$20,000 per participant would more than pay for itself from both society's and the individual's viewpoint.

Why Do Skills Matter?

In the 1980s and 1990s the college wage premium—what college graduates earn above those with only a high school education—grew at unprecedented rates (Murphy & Welch, 1989). By the end of the 1990s it was more important than ever to enter the labor market armed with a college degree. What caused this explosion in the importance of a college education? Most analysts now agree that changes in the structure of the US economy led to a demand for more highly skilled workers that outstripped the ever-increasing supply of college graduates (Katz & Murphy, 1992). Changes in the goods and services we tended to produce, the design and structure of the workplace, and the tools used on the job were all geared to the abilities of more, rather than less, highly skilled individuals. Economists call this type of transformation "skill-biased technological change," that is, technological change that favored particular skill groups, in this case those with higher skills.

There is a convincing argument that the driving force behind the declining relative (and absolute) earnings of lower-skilled individuals comes from the same process: a workplace that on average requires higher skills. This interpretation suggests to some that increased public support for programs that would raise the cognitive skill levels of the least educated individuals, particularly school dropouts, would be an effective way to improve their economic outcomes. Policymakers and the public could be surprised, however, and actual benefits of such programs could fall substantially below the expected benefits. This would happen if shifts in the production technology used in low-skilled

jobs have "deskilled" those jobs, unlike what has happened for more highly skilled jobs in the economy.

As a simple example, consider how technological advancements have altered the job requirements for a typical entry-level type job: check-out clerk. The adoption of optical recognition technology and computerized cash registers has meant that the ability to know basic math in order to calculate change is no longer required for counter clerks. Technological innovations may mean that the ability to smile while working on your feet all day is more important for many low-skill entry-level jobs than knowledge of basic math. If this is an accurate depiction of the kind of entry-level jobs open to dropouts, then there could be an overemphasis on cognitive skill development as a means of improving the economic conditions of low-educated individuals. My research, however, indicates that this is not the case—in the types of entry-level jobs that first employ young dropouts, basic cognitive skills matter.

In Conclusion

Skills matter more in today's labor market than they ever have. But the ramifications of this have primarily been seen in terms of relatively highly skilled individuals. As my research shows, basic cognitive skills are also important for the least skilled in the labor market: young dropouts with low levels of education and little to no work experience. The message for students, schools, and adult education programs is clear. Schools should pay attention to skill formation for all their students, including those who seem destined to drop out before earning their diploma. Adult education programs should not sacrifice skill formation at the expense of strategies aimed more toward GED test-taking skills. Students should work hard while they are in school or in GED preparation programs to acquire the types of basic cognitive skills required for them to function fully in a modern democracy and economy. Individuals drop out of school for all kinds of reasons. It is inescapable that the accumulated set of cognitive skills they possess as they step into the labor market play a major role in determining their economic future.

References

- Katz, L., & Murphy, K. (1992). "Changes in relative wages, 1963-1987: Supply and demand factors." *The Quarterly Journal of Economics*, 107(1), pp. 33-78.
- Murphy, K., & Welch, F. (1989). "Wage premiums for college graduates: Recent growth and possible explanations." *Educational Researcher*, 18(4), pp. 17-26.

Schochet, P., Burghardt, J., & Glazerman, S. (2000). *National Job Corps Study: The Short-Term Impacts of Job Corps on Participants' Employment and Related Outcomes, Final Report*. Princeton, NJ: Mathematica Policy Research, Inc.

Note

The study described in this article will be published in the *Economics of Education Review* and will eventually be a NCSALL Research Brief.

About the Author

John Tyler is an Assistant Professor of Education, Economics, and Public Policy at Brown University in Providence, RI, a faculty research associate at the National Bureau of Economic Research, and a NCSALL researcher. His work examines the economic returns to a GED, the importance of cognitive skills in the labor market, and the impact of working while in high school on academic achievement.

Reading 

(To be read by participants *before* the session.)

What Are the Economic Effects of Earning a GED in Prison?

by Barbara Garner

Focus on Basics, Volume 7, Issue D, September 2005, pp. 11-12

What economic impact does earning a certificate of General Educational Development (GED) offer offenders after they are released from prison? NCSALL researcher John Tyler and a colleague, Jeffrey Kling of Princeton University, examined this question using data from the state of Florida. They compared school dropouts who had been incarcerated in Florida prisons between 1994 and 1999 and obtained a GED during that time with dropouts who entered and exited prison at about the same period but either did not participate in educational programming while in prison or who participated but did not complete a GED. They used state unemployment insurance data for earnings information: the study examined the mainstream labor market rather than the “under the table” economy.

This study is important because, as Tyler reminds us, “The growing prison population is primarily fueled by low educated individuals, especially racial and ethnic minorities: the people we are most worried about in the labor market.” To what extent do education and training programs help these individuals successfully reintegrate into the mainstream labor market? “GED programs are ubiquitous in prisons,” points out Tyler, so studying the economic effect they have makes sense.

“Among racial and ethnic minority offenders — primarily African Americans with a smaller number of Hispanics — we found about a 20 percent increase in the earnings among GED holders relative to non-GED holders in the first post-release year. This effect declined in the second year and by the third year it fell away to basically zero,” explains Tyler. “We found that, for white offenders, there was no difference in the post-release earnings or employment for individuals who got a GED versus those who did not.”

Tyler and Kling’s findings are very similar to those reached by a previous study on the effects of vocational education in prison by the Bureau of Prisons (Saylor & Gaes, 1996). “If you think that the GED is something that will turn prisoners’ lives around, this is a discouraging study,” explains Tyler. “On the other hand, in a world where it’s hard to find big effects in many social programs targeted at our most disadvantaged populations, [this study shows

that] the GED program does have pretty big initial effects for people we are very concerned about.”

Why?

The initial positive economic effect of the GED on minorities — compared to similar ex-offenders who did not attain the GED — dwindles away after two years. Research needs to be done to help us understand why this is so: it may be because the jobs that ex-offenders get tend not to be “career ladder” jobs with opportunities for growth. The non-GED-holding ex-offenders may be getting jobs over time, and the GED-holding group, while working, may not be experiencing substantial wage increases. Thus, over time, the initial positive effect on the earnings of ex-offenders who earned GEDs may be diminishing as the uncredentialed ex-offenders eventually find their way into employment. This is, however, speculation at this point.

Why the white GED-earning ex-offenders’ earnings were not statistically different from those of white ex-offenders who did not complete GEDs or did not participate in GED programs while incarcerated is unknown. This phenomenon certainly raises questions and merits further study.

Other Attributes

By making offenders who participated in prison-based GED programs but did not get their GEDs a key comparison group, the researchers addressed the question of the “omitted variable” problem: what if the offenders who studied for their GEDs in prison had attributes that would have led them to have “superior labor market outcomes” to those of non-GED attempters, even if they did not complete a GED? “For example,” says Tyler, “a GED may simply be a proxy for intelligence or motivation that would have led to greater employment and earnings anyway, with no causal role for the GED itself.” The study is also important because the researchers were able to control for a variety of factors that others researching the impact of prison education on ex-offenders have not been able to control for: prior criminal justice record, prior earnings, marriage status, and prior academic skills level as measured by the Tests for Adult Basic Education, for example. This methodology enables researchers to attribute impact to the GED rather than to these other factors.

Generalizability

Whether these findings can be generalized to other states depends upon the similarity between Florida — the state that was the source of the data — and the state in question. “Florida is a pretty big prison population state,” notes Tyler, “but it looks much more like the rest of the US prison population than

do other big states like Texas or California, because those states have much higher percentages of Hispanics in their prison populations. You also have to think about the economies: in the late 1990s, when these folks were moving out into the Florida economy. Was [Florida's economy in the late 90s] sufficiently different from yours? If so, will the lessons hold for your state?"

To read the full study, "Prison-Based Education and Re-Entry into the Mainstream Labor Market," go to http://www.brown.edu/Departments/Education/facpages/j_tyler/pdfs/papers/Prison_d11_sage2_brownWP.pdf

– Barbara Garner

References

Saylor, W., & Gaes, G. (1996). "PREP: Training inmates through industrial work participation, and vocational and apprenticeship instruction." US Federal Bureau of Prisons. Retrieved May 3, 2005, from http://www.bop.gov/news/research_projects/published_reports/edu_training/oreprprep_cmq.pdf

Understanding and Acting on these Findings

This is a thought-provoking study. The findings — that the GED has a positive economic impact on minority ex-offenders during the first two years after release from incarceration but that the impact dwindles thereafter, and that the GED has virtually no economic impact on white ex-offenders — raise important questions. These include, but are certainly not limited to:

- Why does the impact dwindle after two years?
- Why does the GED have no positive economic impact on white ex-offenders?
- What role does society's treatment of ex-offenders have that overrides the positive economic impact the GED has on non-offenders? (see <http://www.ncsall.net/?id=171> Why Go Beyond the GED?; <http://www.ncsall.net/?id=409> Results from a New Approach to Studying the Economic Benefits of the GED; <http://www.ncsall.net/?id=329> Do the Cognitive Skills of Dropouts Matter in the Labor Market?)
- What other impact does earning a GED have on offenders?
- What could corrections GED programs do to help ex-offenders improve their economic futures?

We hope that you and your colleagues, and you and your students, explore these questions. Share your ideas with others via the *Focus on Basics* electronic discussion list. Researchers including John Tyler are particularly curious about why, for example, earning the GED offers white ex-offenders no economic boost.

Reading 

(To be read by participants *before* the session.)

The Process of Passing the GED

by Barbara Garner

Focus on Basics, Volume 2, Issue B, June 1998, pp. 22-23

“Much work has been done on the impact of the GED,” says John Tyler, researcher on a National Center for the Study of Adult Learning and Literacy (NCSALL) study of the GED, “We don’ t know much about the testing process itself, though. Which tests provide the highest hurdles? For whom does the re-testing feature of the GED matter the most? Who would be most affected in a move to raise the passing standards? This study attempts to answer those questions.”

To obtain a General Educational Development credential (GED), a candidate must take a battery of five tests covering mathematics, writing, science, social sciences, and interpretation of literature and the arts. Passage in most states requires that a test taker’s scores on all tests be above a minimum standard, and that the average of the five tests be above a minimum standard. The GED Testing Service (GEDTS) sets minimum standards; individual states can set higher standards. (Policies may vary from state to state, and were changed in 1997.)

GED candidates can re-take tests, and many of them do. While local policy may differ, GEDTS policy allows candidates to take the tests individually, in whatever sequence they choose, or all at once. “The system is potentially complicated,” Tyler explains, “with candidates making choices about re-testing or quitting, as well as about which tests to take at each attempt.” Using data from the state Departments of Education in Florida and Connecticut, he studied the test-taking process of GED candidates who were 16 to 21 years of age when they tested in those states between 1988 and 1990. He had 15,610 observations from Florida and 4,600 from Connecticut. The study differentiates between whites, Hispanics, and African Americans. Other ethnic groups were represented in such low numbers that they could not be reported.

Most GED teachers would say that the math test is the hardest for their students to pass. The next hardest is the writing test. Tyler’s research validates this. In Florida and Connecticut, among those test takers who failed to receive a GED, the math and writing tests generated the lowest scores. “But,” Tyler says, “we found considerable gender differences.” In both states, the females

who failed to pass the GED scored lowest on the math test; for males, the writing test was hardest. This suggests that male drop outs leave school with relatively poorer writing skills than do females; females leave with relatively weaker math skills. While many studies of K-12 students show similar trends, the research Tyler did uncovered stark differences. Teachers who take this into account by providing extra help in math for women and in writing for men, for example, may improve their students' GED pass rates.

Across ethnicity, the states differed, which was curious. In Connecticut, a much higher percentage of African-Americans relative to both whites and Hispanics found the math test to be the hardest. This difference was not found in Florida.

Testing and Re-Testing

Tyler and colleagues also looked at patterns of test taking. Do people take them all at once, or a few tests at a time? Who passes the first time around? Who re-tests? The full battery takes seven hours and 35 minutes to complete, so it might seem appealing to space them out. Tyler found, however, that about 93 percent of candidates in Connecticut and 96 percent in Florida took all tests on the first attempt. No significant gender or racial differences appeared.

As Tyler points out, "People can take the practice tests and get a pretty good idea of whether or not they are going to pass. So you'd think that people would know when they were ready to take the test, and that everyone who took the test would come pretty close to passing." This is not the case. Overall, only about 64 percent of those in the study passed on the first attempt, and many had results that were far from passing.

Racial differences in pass rates surfaced. Within each state, whites passed the first time at higher rates than Hispanics and Hispanics passed at higher rates than African-Americans. Across states, the patterns bear further examination: only small initial pass rate differences appeared across states for whites and Hispanics, but the initial pass rates for African-Americans were substantially higher in Connecticut than in Florida.

Data on re-testing, a key feature of the GED system, are presented in Table 1. While everyone benefits from the re-testing option, the African-American pass rate rose the most. "This finding raises the same plausible set of conclusions as the section on who struggles most with which test," explains Tyler. "Namely, it indicates that whites drop out with a much better set of skills than minority group members. What are the implications of this? Does the GED lead to improved skills for minority group members, since they would, on average, have more preparation to do to pass the exams? Or is it possible that the re-testing feature subverts this possible route to better skills

by primarily serving as a 'try it till I pass' vehicle? These racial differences on first attempt have never before been revealed. They are an important piece that has been missing from our understanding.”

Table 1: Proportion of candidates who passed on their first attempt and ultimately, by demographic group, in Connecticut and Florida.

	Connecticut			Florida		
	Whites	African-Americans	Hispanics	Whites	African-Americans	Hispanics
Pass rates on the initial attempt	0.775	0.538	0.600	0.762	0.440	0.639
Ultimate pass rates	0.893	0.724	0.723	0.864	0.580	0.750

In trying to interpret those findings, limitations of the data leave some important questions unanswered. “We just don’t have enough information to answer additional questions, and there will always be unanswered questions,” Tyler states. “For example, even if we had a flag for program participation, we would like to have information on the quality of programs, length of time in programs, what the program did. Even if we had program participation information, severe selection problems would confound interpretation. For example, what if we found that program participants had higher initial pass rates than non-participants? Would that be an indication that participation in the program tended to raise scores relative to what they would have been otherwise? Or, does it indicate that more able and conscientious drop outs tend to enroll in programs as insurance for passing, while less motivated drop outs tend not to enroll? Without more data, we don’t know the answer to that.

“Alternatively, what if we found that program participants tended to have lower initial pass rates than non-participants? That does not necessarily tell us that the program is doing nothing. It could be that the most unskilled are enrolling in programs, that the programs are doing a good job on average in raising scores, but they are dealing with a very unskilled group relative to the non-program population.”

Still Working

Tyler is now working on understanding who would be affected in a move to raise passing standards. He is checking to see if race differences exist for those who fail on the first attempt but are right on the margin and those who fail dramatically on the first attempt. And he will also look at people who are

right on the margin of passing and see if the gender differences in math and writing exist there. “Maybe when you get to people with higher levels of basic cognitive skills, the gender differences wash out,” he suggests.

For more information on his work, contact John Tyler via e-mail at tylerjo@hugsel.harvard.edu. The findings of his study of the economic impact of the GED begin on page 1 of this issue; the full report can be ordered for \$10 from NCSALL Reports, World Education, 44 Farnsworth Street, Boston, MA 02210. The full report on testing patterns will be available from the same address next fall.

Letter to the Editor

by John Tyler

Focus on Basics, Volume 2, Issue C, September 1998, p. 26

In the last issue of *Focus on Basics*, I presented and discussed the findings from a new study on the economic impact of the GED by Richard Murnane, John Willett, and myself. One of the interesting and troubling findings of that study was that there was a substantial impact of the GED on the earnings of young white dropouts (age 21-26) who passed with scores just at the passing level, but not on the earnings of young nonwhite dropouts with similar scores. I offered several possible explanations for our results. Several subsequent letters to the editor of *Focus on Basics* suggested that my explanations were dancing around a simple explanation for our findings: employer discrimination in the labor market toward nonwhite job applicants. While I understand the spirit of these responses to the article, I would like to clarify exactly what we can and cannot say with our research.

First, however, some individuals were upset with our use of the term ‘nonwhite.’ While another designation could have been employed, the term simply derives from data limitations. That is, in our data we were only able to identify white, non-Hispanic individuals as one group, and everyone else as the other group. Thus, the ‘nonwhite’ group includes African-Americans, Hispanics, Native Americans, Asians, and anyone else who chose a race/ethnicity category other than ‘white’ on the GED test form.

The central assertion in some of the letters we received concerned the fact that our results seemed to ‘prove’ the existence of employer discrimination in the labor market. Yet we did not discuss that as an explanation for our findings. The reason that discussion was lacking in the article is that we CANNOT establish with our study the presence of employer discrimination. Let me begin an explanation of that statement with a review of our findings. Our study shows that young white dropouts who were 16-21 when they attempted the GED in 1990, and who just barely passed the GED exams, received a substantial boost in earnings from acquisition of the GED. Furthermore, this boost in earnings was solely due to the labor market signaling value of the credential: employers used the GED as a signal of attributes that they valued but could not directly observe (e.g., motivation, commitment to work, maturity, etc.). However, we did not find that employers similarly valued the credential when it was possessed by the young nonwhite dropouts in our study. On the face of it, this may seem like evidence of racial/ethnic discrimination in the labor market. This interpretation warrants a closer look.

The relevant ‘thought-experiment’ for our results concerns two hiring situations. In the first, two observationally similar young white dropouts apply for a job, one with a GED and one without. Our results suggest that, in this case, the employer will use the GED as relevant information in her hiring decision, tending to prefer the white GED-holder over the white uncredentialed dropout. In the second situation, two young nonwhite dropouts apply for a job, one possesses a GED and the other does not. Our results suggest that in this situation, the employer does not use the GED as a signal of relevant information, or at least that the employer considers other observable information as more important than the GED in the hiring decision. That is, our data show that the nonwhite GED-holder is no more likely than the uncredentialed nonwhite dropout to be hired.

There is one way that these two thought-experiments’ could be construed as evidence of employer discrimination. If discrimination leads employers systematically to relegate young nonwhite dropouts to such low-level jobs that the employer has no need for the information of productive attributes conveyed by a GED, then we would expect no GED effect’ on the earnings of nonwhite dropouts. Other work we have done, however, suggests that this is not the case. For example, we find that nonwhites dropouts with and without credentials in our data are employed in jobs where the returns to basic cognitive skills are just as high, and sometimes higher, than the returns to skills enjoyed by white dropouts in our data. This suggests that nonwhite dropouts are employed in jobs where skills do matter and are rewarded.

I am certainly not attempting to argue the absence of labor market discrimination. Subtle and overt acts of discrimination are common in our society. It would be naive to argue that the labor market is immune from discriminatory practices. The relevant question, however, is what can we say about market discrimination with our research, and the answer is very little.

Our results are perplexing. Why do employers seem to value the GED as a signal for white dropouts who are on the margin of passing the GED, but not for nonwhite dropouts who barely pass? The results from our study do not contribute any information to the question of employer discrimination: that is a thought experiment involving a white and a nonwhite dropout showing up for the same job, a scenario not applicable to our study.

Information About NCSALL

NCSALL's Mission

NCSALL's purpose is to improve practice in educational programs that serve adults with limited literacy and English language skills, and those without a high school diploma. NCSALL is meeting this purpose through basic and applied research, dissemination of research findings, and leadership within the field of adult learning and literacy.

NCSALL is a collaborative effort among the Harvard Graduate School of Education, World Education, The Center for Literacy Studies at The University of Tennessee, Rutgers University, and Portland State University. NCSALL is funded by the U.S. Department of Education through its Institute of Education Sciences (formerly Office of Educational Research and Improvement).

NCSALL's Research Projects

The goal of NCSALL's research is to provide information that is used to improve practice in programs that offer adult basic education (ABE), English for Speakers of Other Languages (ESOL), and adult secondary education services. In pursuit of this goal, NCSALL has undertaken research projects in four areas: (1) student motivation, (2) instructional practice and the teaching/learning interaction, (3) staff development, and (4) assessment.

Dissemination Initiative

NCSALL's dissemination initiative focuses on ensuring that practitioners, administrators, policymakers, and scholars of adult education can access, understand, judge, and use research findings. NCSALL publishes *Focus on Basics*, a quarterly magazine for practitioners; *Focus on Policy*, a twice-yearly magazine for policymakers; *Review of Adult Learning and Literacy*, an annual scholarly review of major issues, current research, and best practices; and *NCSALL Reports* and *Occasional Papers*, periodic publications of research reports and articles. In addition, NCSALL sponsors the Connecting Practice, Policy, and Research Initiative, designed to help practitioners and policymakers apply findings from research in their instructional settings and programs.

For more information about NCSALL, to download free copies of our publications, or to purchase bound copies, please visit our Web site at:

www.ncsall.net