ED 465 768   TM 033 907

AUTHOR   Sonak, Brian C.; Suen, Hoi K.; Zappe, Steve M.; Hunter,
                Maxwell W.
TITLE   The Efforts of a Web-Based Academic Record and Feedback
                System on Student Achievement at the Junior High School
                Level.
PUB DATE   2002-04-00
NOTE   28p.; Paper presented at the Annual Meeting of the American
                Educational Research Association (New Orleans, LA, April
                1-5, 2002).
PUB TYPE   Reports - Research (143) -- Speeches/Meeting Papers (150) --
                Tests/Questionnaires (160)
EDRS PRICE   MF01/PC02 Plus Postage.
DESCRIPTORS   *Academic Achievement; *Computer Uses in Education;
                *Feedback; Information Dissemination; *Junior High School
                Students; Junior High Schools; Online Systems; Parent
                Attitudes; Parents; Path Analysis; Qualitative Research;
                Student Attitudes; Test Results; *World Wide Web

ABSTRACT
                With the advent of computer technology, students can now be
informed about their progress and provided feedback limited only to the level
of efficiency. For the 1999-2000 school year, a computer reporting program,
TigerNet, was instituted in a junior high school in Pennsylvania. Through a
year-long investigation, data were collected to determine the effects of
TigerNet on academic performance. Achievement data were available for 394
students, and parent responses to a questionnaire were received from 460
parents. A path analysis reveals a direct, positive relationship between
student use of the system and academic performance. There is also a positive
relationship, in an indirect sense, between teacher use and academic
performance. This paper discusses the ramifications of these two positive
relationships, and how these results are shown in the light of a qualitative
analysis of parental responses. The Academic Achievement Motivation Survey
adapted from I. Russell (1969) and the parent involvement survey, adapted
from T. Keith and others (1993) are attached. (SLD)

The Effects of a Web-based, Academic Record and Feedback System

On Student Achievement at the Junior High School Level

Brian C. Sonak, Hoi K. Suen
Pennsylvania State University

Steve M. Zappe
Bucknell University

Maxwell W. Hunter
Pennsylvania State University-Altoona

2 BEST COPY AVAILABLE

Abstract

Academic performance is the ultimate goal of education, and the relationship to the environment is of utmost importance. With the advent of computer technology, students can now be informed with updates limited only to the level of efficiency. For the 1999-2000 school year, a computer-reporting program (TigerNet) was instituted in a junior high school in central Pennsylvania. Through a yearlong investigation, data was collected to determine the relationship or effects of TigerNet on academic performance. A path analysis revealed a direct, positive relationship between student use of the system and academic performance. Indirectly, there is a positive relationship between teacher use and academic performance. This paper discusses the ramifications of these two positive relationships, and how these results are shown in the lights of a qualitative analysis of parental responses.

Learning environments at any level seek to maximize knowledge retention by and the critical thinking skills of a learner. Learning is neither an inherent quality of the learner (student) nor the environment. Rather it is part of a system or "loop," consisting of the learner, instruction (content delivery), and assessment (tests). For the purposes of education, the learner is a central aspect in this loop, for it is the learner who is the ultimate stakeholder. Many investigations have attempted to discover the optimal role to be played by the three elements in the loop.

Educational successes are traditionally measured as responses either to singular prompts (e.g. standardized tests) or as a composite of responses to multiple prompts and tasks (e.g. an end of a marking period grade). Regardless of the measure of learning, the learner is again the central component in education. As a part of the instruction-assessment loop, the learner is not the only entity involved in this process. The instructor shapes instruction, delivers content, and designs the prompts (and rubrics) used to measure learning. Given that this is the case, a vital channel of communication between the teacher and student could not but facilitate the learning environment.

The main goal of this investigation was to gather and analyze data on the TigerNet system's effect on student academic achievement in a junior high school setting. TigerNet is a computer database system for schoolwork, assignments and progress reports. With it, teachers were able to provide up-to-date information to students, facilitating their ability to keep track of personal academic progress. Using a standard home computer with Internet connection, a parent could receive information through the system's World Wide Web site. In this current study, a series of path analyses were

constructed and used to examine quantitatively the impact of TigerNet on student academic achievement.

It should be noted that the TigerNet system did not mediate instructional activity *per se*. In other words, it was not a tool of *direct instructional* innovation. Rather, it was an innovation in how to communicate assessment results and convey information about task expectations. It was believed that achieving new capability in these areas would benefit ongoing instruction and learning. TigerNet was, therefore, designed to promote and facilitate activity in the aforementioned instruction-learning-assessment loop. The primary focus of this study then was to consider specific elements of system use with the instruction-learning-assessment loop in order to determine which specific aspects are related.

Secondarily, a content analysis of parent responses to an open-ended survey was performed in order to understand the nature of their TigerNet involvement and its impact on their child's education. It is accepted generally that parents play a vital role in guiding, facilitating, and motivating their child's learning. With the changing make-up of our nation's families; e.g. so many children living in dual-career (dual-job), single-parent, or step families; it has become more difficult for many parents to find time for substantive involvement in their child's education (Waddock, 1995). It was hypothesized that a system like TigerNet would provide new, possibly easier opportunity for parents to become involved.

It was predicted that TigerNet use would provide parents with increased access to and influence over information about their child's daily academic activities and performance outcomes. It was believed this could "prime" them to discuss schoolwork

with their children to help in problem areas or to provide effective praise. While not a focus of the current study, the TigerNet system was also seen to be a way for parents to motivate their child to succeed academically, as well as develop an internal sense of motivation (Zappe, Sonak, Hunter and Suen, 2002). In addition TigerNet was viewed as an innovative way to improve communication among parents, teachers, and school officials.

As stated already, the theoretical impact of TigerNet use on the instruction-learning-assessment loop would be indirect. Specifically, in order for it to have inpact, it was theorized that TigerNet would have to alter the perception of all stakeholders (i.e., community, administration, parents, teachers, children) toward a greater positive regard for technology use. The resulting increased acceptance would then prompt desirable teacher, student, and parent behaviors e.g., modified instruction based on feedback, changed study habits based on TigerNet information, and changed parental involvement. Finally, it was hypothesized that these behavior changes would impact on student academic performance.

Method

Given the indirect connection between TigerNet use and student performance, traditional quasi-experimental, before-after or control group comparison designs were considered insufficiently sensitive to detect possibly important effects. Additionally, given the naturalistic field test circumstances, there was no opportunity for the random assignment of treatments required to achieve a true experimental design. Because of these design limitations, it was determined that an overall correlational design would be most appropriate.

The theoretical model included eight variables, of which four were obtained directly from within the TigerNet system. The beginning theoretical model was an adaptation of a model produced by Keith et al (1993) that examined the relationship between parental involvement and academic success. Similar to Keith et al (1993), our primary dependent variable was a measure of student success. A multiple regression equation with seven predictor variables and academic achievement as the dependent variable was considered to be inappropriate, as some of the variables (described below) had the ability to be both an independent and dependent variables in the design. The original theoretical model was a path analysis. The original theoretical path model appears in figure 1.
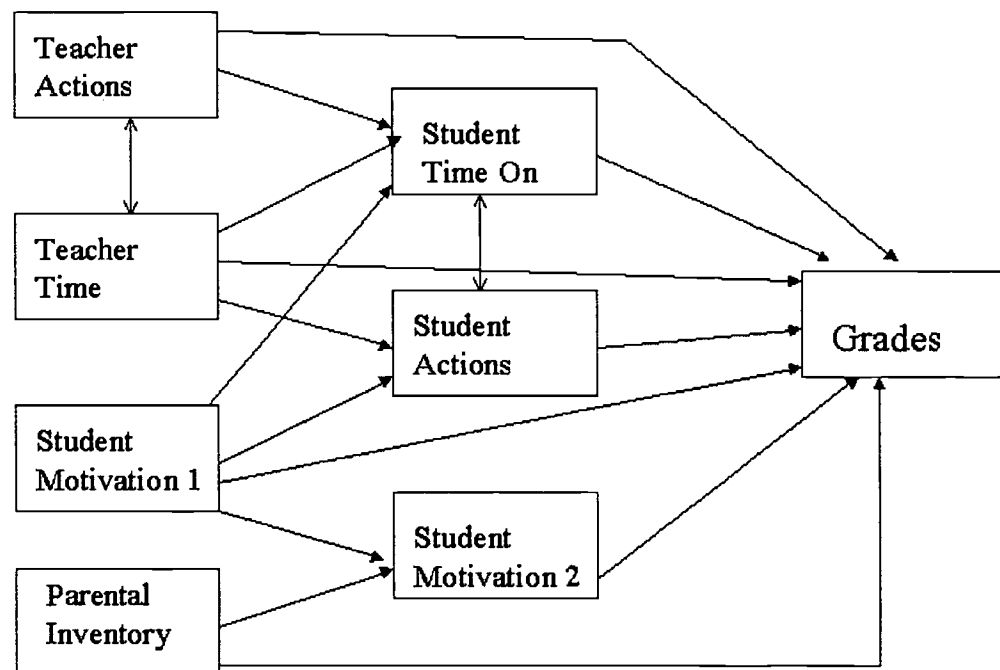

Figure 1: Initial TigerNet Model

This model included eight variables, as listed below. Measures of the first four were obtained from sources outside of the Tigernet system.

1. *Student Academic Achievement:* This was the only fully dependent variable that was, directly or indirectly, a function of all other variables. Student academic achievement was defined as a core-course GPA (English, Mathematics, Science, Social Studies).

2. *Academic Achievement Motivation (1):* Student academic achievement motivation was measured with a modified version of Russell's (1969) *School Achievement Motivation Scale.* The scale was administered at the beginning of the school year. Scores on this measure ranged from 0 to 29. A copy of the Academic achievement Motivation survey appears in appendix 1.

3. *Academic Achievement Motivation (2):* A second administration of the modified School Achievement Motivation Scale, at the end of the school year.

4. *Parental Involvement:* A measure of parental involvement in the education of his/her child was obtained with a scale based on Keith et al. (1993). Scores on this instrument ranged from 0 to 16. The parental involvement survey appears in appendix 2.

5. *Prevalence of Teacher TigerNet Use:* This was defined as the total time each teacher spent using the system in connection with a particular student.

6. *Frequency of Teacher TigerNet Use:* This was defined as the total number of system actions taken by a teacher in connection with a particular student

7. *Prevalence of Student TigerNet Use:* This was the total time each student spent using the system.

8. *Frequency of Student TigerNet Use:* This was a count of the total number of different system actions each student took.

There were 34 categories of user action for which the TigerNet system captured Information. Twelve pertained directly to students, and four to teachers. Student actions include: generating reports through school LAN connection, generating reports via web connection, sending messages, printing messages, opening messages, deleting messages, viewing assignment specifications, printing assignment specifications and viewing and assignment specifications via web connection. Additionally, the teachers have the ability to enter, modify and delete assignments, and task score. As you can see, the actions of "logging-on" and "logging-off" were not included as part of the 12. That information was used only to calculate the total time using the system.

For the secondary content analysis, an open-ended survey (appendix 3) was administered to parents. It sought to measure perception of system efficacy to facilitate school/parent communication. Parent responses were subject to a content-analysis technique that identified frequencies of similar-type comments.

<div align="center">Results</div>

Summary of Quantitative Analysis

Psychometric Analyses of Scales

Two psychometric scales measured two distinct psychological and behavioral constructs: student academic achievement motivation and parental involvement. To assess power the on student achievement, we evaluated the composite scores reliability the to ascertain their adequacy. This was accomplished with classical item analysis based on responses to the scales that had been gathered at the beginning of the 1999 academic year. Based on the responses from 394 students, the Cronbach-Guttman Alpha coefficient for the *Academic Achievement Motivation Scale* composite scores was 0.715,

with a standard error of measurement of 2.140. Since data from the scale were used is aggregate statistical analyses, the reliability of the scale was considered to be adequate. The relatively small standard error of measurement did not reduce the power of analysis appreciably. Appendix 4 provides detailed item statistics for the scale with this sample of students.

The reliability coefficient for *Parental Involvement Scale* composite scores was, unfortunately, quite low. Specifically, the Cronbach-Guttman Alpha coefficient for 460 parents was 0.285, with a standard error of measurement 1.251, which is quite low in absolute terms. It was apparent upon closer examination of the data that low reliability in this case was not caused by large error variance. Rather it was due to a lack of true variance across parents. Restated, parents were very similar to one another in their reports of school-related involvement. On a measurement scale that ranged from 0 to 16 points, the standard deviation for parental involvement scale was only 1.48. Except for Items 4, 11, and 14, all items had especially small variances, suggesting that parents provided virtually identical responses. Specifically, almost all parents reported being involved in some of the school-related activities (items 1 through 9 and 16), while almost none reported being involved in other types of school-related activities (items 10 through 15) The net effect was a lack of score variance across parents.

Notwithstanding low reliability, the scale was kept without modification. First, a better measure of parental involvement was simply not at hand. Second, it was considered possible that parental academic involvement as a construct has a small variance by its nature, rendering it inherently difficult to measure. Finally, some items with the least variance, such as Items 3 and 5, were so central to the concept of parental

academic involvement that removing them would have compromised content representation and scale relevance. This would, in turn, have jeopardized the validity of the score as measure of parental involvement. Therefore, the scale was retained. It was noted, however, that subsequent interpretation of parental involvement would need to be undertaken with caution; aware that failure to detect relationships could be attributed to a lack of statistical power. Appendix 5 provides detailed item statistics for the scale based on 460 parents.

Path Analysis

A summary of descriptive statistics for the eight variables is presented in Table 1.

Table 1: Descriptive statistics of TigerNet Variables

Variable	Mean	Stdev	Min	Max
Cores subject grades (3rd marking period)	87.01	8.37	48.86	100.73
Cores subject grades (4th marking period)	87.36	8.17	42.05	100.36
Moti1	17.49	4	3	27
Moti2	17.23	4.99	0	27
Parent Involvement	10.13	1.48	3	15
Teacher prevalence	24,262.29	7,098.97	1,027.75	50,234.85
Teacher use	9184.93	7704.48	375	30094
Student prevalence	173.3	212.21	0	2639.82
Student use	114.01	100.12	0	697

The two student variables, prevalence and use, were both positively skewed. This resulted from a few "power users" who spent a lot of time on the system and took many actions. A natural log transformation, not affecting the interpretation of the path analysis,

effectively "normalized" these two variables for analysis. Table 2 presents summary statistics for the two transformed variables.

Table 2: Descriptive statistics of TigerNet Variables, transformed

Variable	Mean	Stdev	Min	Max
Student prevalence	4.69	1.01	1.02	7.88
Student use	4.40	.90	.69	6.55

Data for all variables were submitted to a series of path analyses in the EQS computer program (Bentler, 1997). After evaluating sampling adequacy and model identification sufficiency, the variance/covariance matrix for the eight variables was submitted to EQS to estimate path coefficients and fit statistics. Figure 2 presents a graphic depiction of the final model with path coefficients and fit statistics. Appendix 6 has the full fit statistics for the model in figure 2.
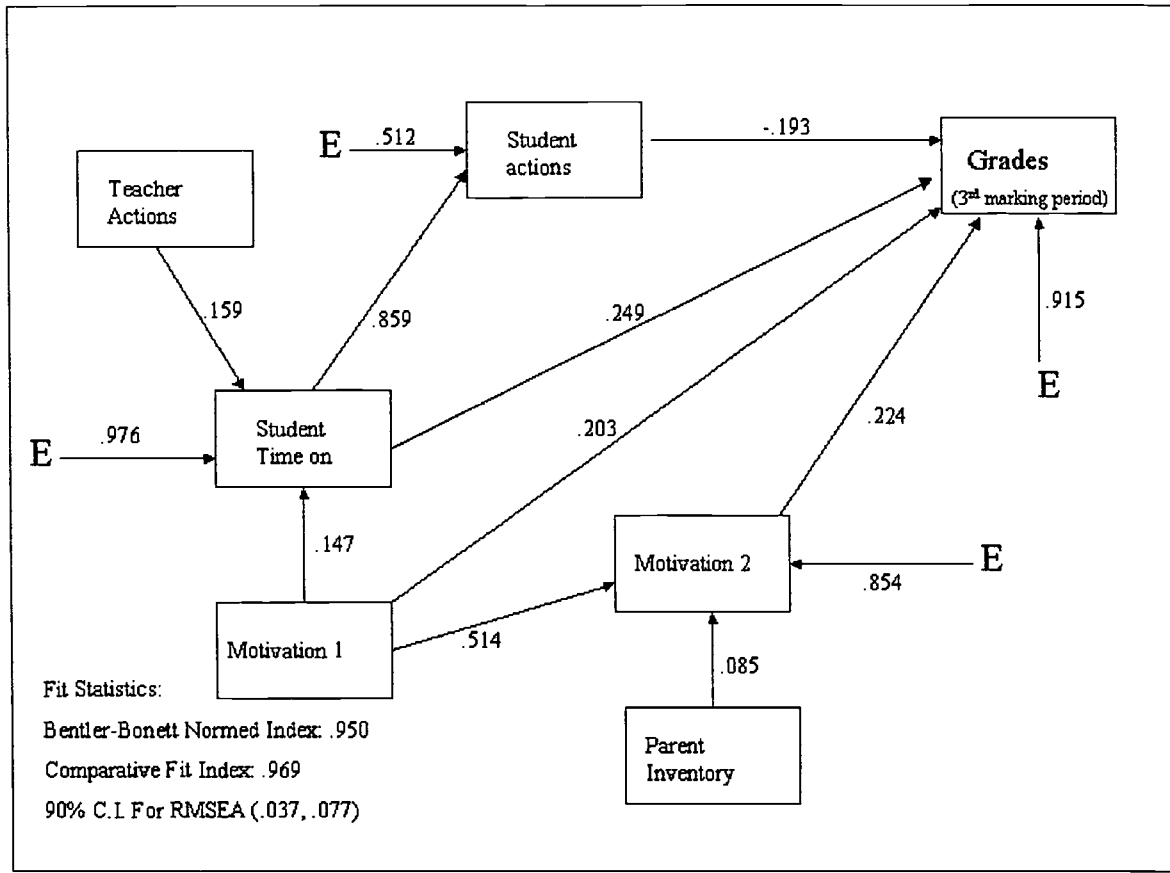
Figure 2. "Best Fit" Path model

Summary of Qualitative Analysis

As indicated earlier, a survey was sent to parents to gather information that could help understand the effect of TigerNet on their involvement. The first two questions addressed how parents accessed TigerNet information and how often they did so. 200 parents, 81% of those who returned the survey, indicated that they accessed TigerNet information in some manner, almost all through home, internet connection and 91 parents (47.6%) responded that they used TigerNet information at least once a week. The remaining five questions of the survey were open-ended and were analyzed with N-Vivo content analysis software (Fraser, 1999; Qualitative Solutions and Research Pty. Ltd., 1999). A total of 772 comments were coded from the pool of parent responses. Five

major themes were revealed: Positives, Negatives, Improvements, Child Interaction, and School Interaction.

248 comments were determined to be generally positive and they were categorized into 4 subgroups: increased responsibility, increased organization, more informed, and grade improvement. It should be noted that 212 comments indicated that having access to TigerNet allowed parents to feel more informed about their child's education.

197 comments were classified as negative. They fell into 6 subcategories: e-mail problems, lack of update, system environment, log-in problems, slow speed, and other tech difficulties. Eighty-seven (87) of these indicated that teachers did not update system information satisfactorily. Forty-four (44) noted problems logging into the system. There appeared to be two *distinct* issues with log-in problems: difficulty with the functioning of parent accounts and difficulty accessing the system at certain times. Thirty-five (35) comments addressed other technical difficulties parents encountered using TigerNet. Fourteen contended that the system environment was not optimal or desirable and 12 cited problems with the email feature.

123 suggestions to improve the system were made. They could be grouped into six subcategories: assist teachers, change system environment, require updating by teacher, provide parent training, incorporate additional information, and activate TigerNet in the high school. With regard system improvements, 52 parent comments asked that teachers be held accountable for updating the information on TigerNet.

When parents were asked if TigerNet had an effect on the way they interacted with their child, three themes emerged from 112 comments: increased trust &

accountability, helped with schoolwork, and time together. The most common impact (48 comments) was that TigerNet provided an opportunity to spend "time together" reviewing and discussing school experiences. Another strong theme (45 comments) was that TigerNet "increased accountability and trust" between parent and child with regard to academic work.

When parents were asked if TigerNet affected their interaction with the junior high school teachers, two themes emerged 92 comments: better teacher contact and quicker communication. Most of these (49 comments) suggested the system allowed parents to communicate in a timely manner with teachers about their child's school work and progress. Forty-three (43) comments in this area were grouped under the theme "teacher contact."

Conclusions

Path analysis

Student use of TigerNet was positively associated with higher academic performance (CPGA), beyond what could have been explained by academic achievement motivation. Specifically, after controlling for academic achievement motivation, total time spent using the system was significantly associated with higher academic achievement. It is of some interest to note that this result was only found for the third, 9-week marking period (ending in March) but not for the fourth (ending in June). This does not necessarily imply that TigerNet had no impact on student academic achievement at all during the fourth marking period. Rather, it could be indicate inherent instability of grades awarded for final marking period of the academic year.

This was not be altogether unexpected, given the flow of action in a junior high school throughout an academic year. Indeed, it was teachers who noted that the third marking period was the stretch during which academic achievement determines advancement for the next year. In contrast, fourth marking period grades had much less influence, either positively or negatively, on promotion/retention decisions. Teachers observed students who had maintained a high GPA through three marking periods often "relaxed" and did not work as hard over the final stretch. Finally, teachers also noted that in some cases they give higher grades to students at the conclusion of the school year to "make up" prior deficits and reward effort. Confounding these factors, and possibly others, were seen as potentially significant sources of random error affecting 4th marking period CGPA.

In the final model there existed a positive association between achievement and student use time; a positive association between use time and number of actions taken; but a negative association between number of actions taken and achievement. The reason for the negative association between number of student actions and achievement could not be determined from the data collected. A possible explanation follows from the fact that students could take different actions using the system, some of which took longer to perform. For example, creating a message to a teacher was more time consuming than checking for the crediting of a late assignment. In the latter case, a student might keep checking back, quickly increasing the count of actions taken while not adding much time to their system use. The former student, presumed to be a higher achiever, would accumulate more connection time while recording fewer actions taken. The taking of

purposeful and resourceful action, within a system that provides for such, may count more than taking actions frequently.

Student academic motivation, measured at the beginning and end of the school year, positively affected achievement directly and indirectly. Within the study, both measures acted as control variables so that the variance explained by the system (i.e. student time on and student action) could be delineated (as noted above). Level of academic motivation at the beginning of the year predicted student time spent on the system, which, as already stated, had a positive relationship with academic performance. The positive relationship between motivation at the end of school year and performance is confirmation to the notion that motivated students would earn higher grades. The relationship would be expected with or without the use of TigerNet. Therefore, the direction (cause, if you will) of the relationships between system use, motivation and performance are vitally important.

A viable hypothesis is that motivated student would use the system more, thereby producing an artificial positive relationship between use and performance. This is not the case here, in accordance with the results, system use positively affect performance when the motivation of the student is controlled. Therefore, any artificial or spurious relationship is controlled for by the path analysis. One negative aspect of technology use, especially a system such as TigerNet, is that differences in grades attributable to academic motivation may become more apparent with the use of this or any other computer system. Any program or computer application that could be perceived as "difficult" to operate or having low academic value may increase differences that exist in student due to motivation. This may be the case in this study, as beginning of school year

motivation score is a predictor of system use. Overall, students who performed the best were a) high in academic motivation, and b) high users of the TigerNet system.

The number of teacher actions was indirectly related (positively) to academic achievement *through* student actions. However, teacher use time was not related to any variable in the model and ultimately was eliminated from consideration.

Parental involvement, as measured in this study, had no direct relationship to academic achievement, student use, or teacher use. But, it did have a small impact on student motivation toward the end of the year. As noted earlier, measurement of this variable in the current study was considered problematic. The parental involvement survey had very low reliability, beyond the expectation associated with its short length. Originally, it had been hoped that system-captured records of parental login and parental-teacher contacts could serve as measures of involvement. Unfortunately, neither could be obtained for use in the final model. Furthermore, as a self-report measure, survey responses were subject to self-selection effect bias. Lastly, the return rate for the parental survey was under 50%.

Qualitative Analysis

Nevertheless, content analysis of *Parental Feedback Survey* responses suggested that parents were very supportive of the system. They reported that TigerNet increased "sense for responsibility" among their children. Parents reported further that they were better informed of their children's schoolwork. They said the system had increased their involvement in their children's schoolwork, increased trust between children and parents, and increased time spent with their children. Finally, parents reported TigerNet allowed better and quicker communication with teachers. These findings clearly indicated a

parental belief system utility. Consistent with this, several parents requested school district extension of the system to the high school level.

Positive parent comments focused on educational aspects of the system. Their negative comments focused on technical issues not related to the educational process, including scalability (the limit of simultaneous use to access the system) and operational reliability. All comments concerning communications among teachers students, and parents were positive.

Parents' recommendations to improve system operation emphasized teachers updating system information in a timely manner. Parents understood that while they their children are the primary beneficiaries, teachers still "drove" the system. It was abundantly clear in this study that the success of TigerNet, or any type of technology-enabled academic information feedback system, depends most critically on teachers as the catalysts.

Further Study

It is concluded from this study that TigerNet system concept and tool operated with benefit to academic achievement and communication. Student system use positively correlated with their academic performance, in a model that controlled for their academic motivation and parental involvement. The inverse finding of a negative relationship between student time on the system and grades remains to be fully explained, but most likely a product of efficient and purposeful student navigation of the system. Further study should attempt to clarify the extent to which specific actions are related to academic performance.

Parental involvement was difficult to define and measure quantitatively. The survey employed in the current study is not adequate. Parents responses, however, qualitatively corroborated relationships found in the path analysis. Further study should try for better quantitative definition of parental involvement.

References

Bentler, P.M. (1997). *EQS: Structural equations program manual.* Encino, CA: Multivariate Software, Inc.

Fraser, D. (1999). *NVivo Reference Guide.* Melbourne, Australia: Qualitative Solutions and Research Pty. Ltd.

Keith, T., Keith, P., Troutman, G., Bickley, P., Trivett, P., & Singh, K. (1993). Does parental involvement affect eighth-grade achievement? Structural analysis of national data. *School Psychology Review, 22,* 474-496.

Qualitative Solutions and Research Pty. Ltd. (1999). *Nud*ist Vivo (NVivo) for Qualitative Research* (1999). Melbourne, Australia: Author.

Russell, I.L. (1969). Motivation for School Achievement: Measurement and Validation. *The Journal of Educational Research. Vol. 62* (6), 263-266.

Waddock, S.A. (1995). *Not by schools alone: Sharing responsibility for America's Education Reform.* Westport, CT: Praeger.

Zappe, S., Sonak, B., Hunter, M. & Suen, H. (2002) The Effects of a Web-based Information Feedback System on Academic Achievement Motivation and Performance of Junior High School Students. Paper presented at the American Educational Research Association. New Orleans, La.

Appendix 1:

Academic Achievement Motivation Survey

This survey is supposed to get an idea of how you feel about your achievement with school-related activities. Please circle your response, yes or no, to the following statements as to how you currently feel. Please be as honest as possible, and try not to skip any questions. Thank you!

1. Students should set their goals only as high as they can easily reach.	YES	NO
2. Does it bother you if another student makes better grades than you do?	YES	NO
3. Would you rather be a leader in a small school than to be just another student in a large school?	YES	NO
4. Does failure discourage you from trying as hard the next time?	YES	NO
5. You should select your friends from among those whose goals are generally as high as your own.	YES	NO
6. Would you like to take a school subject in which no tests were to be given?	YES	NO
7. Do you often compare your work with the work of others?	YES	NO
8. Are you usually on time with written assignments?	YES	NO
9. Do you believe, "Win or lose, who cares?"	YES	NO
10. Do you try to make better grades than other students in your classes?	YES	NO
11. Rewards should be given regardless of effort or achievement.	YES	NO
12. Would you, or do you, enjoy being one of the class leaders?	YES	NO
13. If the student who makes the highest grade on a test is to receive a valuable award, would you stay home from a social event or an athletic event to study?	YES	NO
14. Do you stick to an assignment until it is completed even though it is dull and boring to you?	YES	NO
15. If you lost several times consecutively, would you quit trying?	YES	NO
16. Would you prefer to enroll in a course in which no grades are to be given?	YES	NO
17. Would you ever enter a contest with other students knowing you had a very slight chance of winning?	YES	NO
18. Do you think that school letters should be given for high grades as well as for sports?	YES	NO
19. If you had to choose between taking part in a contest or being one of the judges, would you choose to be a judge?	YES	NO
20. Do you think that you enjoy trying to do well in your school subjects more than other boys and girls in your classes?	YES	NO
21. Would you prefer to sit in the back of a classroom?	YES	NO
22. Rewards earned are worth more than those which come without effort.	YES	NO
23. What parents expect of their children is more important than what the child wants for him/herself.	YES	NO
24. Your friend stopped running when it became evident that he/she was losing the race. Would you have stopped running in this situation?	YES	NO
25. Do you tell your parents about your successes?	YES	NO
26. Do you tell your parents about your failures?	YES	NO
27. When someone is being praised, do you wish you were?	YES	NO
28. When someone else is praised, does it cause you to give less effort?	YES	NO
29. Is there someone you enjoy beating in a contest or in school grades?	YES	NO

Adapted from Russell, I. L. (1969). Motivation for School Achievement: Measurement and Validation. *The Journal of Educational Research, 62* (6).

Appendix 2:

Parental Involvement Survey

How often do you discus with your child about:
(for questions 1 through 7)

1)	selecting courses or programs at school	not at all	infrequently	occasionally	frequently
2)	school activities of particular interest to you	not at all	infrequently	occasionally	frequently
3)	things studied in class	not at all	infrequently	occasionally	frequently
4)	planning the high school program	not at all	infrequently	occasionally	frequently
5)	experiences in school	not at all	infrequently	occasionally	frequently
6)	his/her plans for high school	not at all	infrequently	occasionally	frequently
7)	his/her post high school plans	not at all	infrequently	occasionally	frequently

8)	How often do you check on homework	not at all	infrequently	occasionally	frequently
9)	How often do you limit TV viewing time	not at all	infrequently	occasionally	frequently
10)	How often do you contact the school about fund raising?	not at all	infrequently	occasionally	frequently
11)	How often do you contact the school about doing volunteer work?	not at all	infrequently	occasionally	frequently

Do you have a:
(for questions 12 through 14)

12)	Family rule about maintaining grade average	YES	NO
13)	Family rule about doing homework	YES	NO
14)	Family rule about how many hours the television is on during the school day	YES	NO

15)	Have you attended parent visitation night?	YES	NO
16)	Do you serve on the parent advisory committee?	YES	NO

Adapted from Keith, T., Keith, P., Troutman, G., Bickley, P., Trivett, P., & Singh, K. (1993). Does parental involvement affect eighth-grade achievement? Structural analysis of national data. School Psychology Review, 22, 474-496.

Appendix 3:

End of Year TigerNet Parent Survey - please return in enclosed envelope

1. How did you access TigerNet information? (check as many as apply)

    ☐ logged in with my own parent account

    ☐ asked my child to login with their account to get me information

    ☐ asked my child to bring home reports printed at school

    ☐ I did not access TigerNet information in any way

2. If you used TigerNet information, about how often did you use it? (check one)

    ☐ daily

    ☐ several times a week

    ☐ once a week

    ☐ every other week or less frequently

3. What did you like most about TigerNet?

4. What are some problems you encountered in using TigerNet?

5. How do you think TigerNet might be improved?

6. Has TigerNet changed the way you interact with your child? If so, how?

7. Has TigerNet changed the way you interact with the Hollidaysburg Area Junior High School? If so, how?

24

Appendix 4

Item Statistics of Academic Achievement Motivation Scale

		Mean	Std Dev	Cases
1.	S1	.6142	.4874	394.0
2.	S2	.1447	.3522	394.0
3.	S3	.4746	.5000	394.0
4.	S4	.8629	.3443	394.0
5.	S5	.1878	.3911	394.0
6.	S6	.1878	.3911	394.0
7.	S7	.5584	.4972	394.0
8.	S8	.9315	.2530	394.0
9.	S9	.4670	.4995	394.0
10.	S10	.5305	.4997	394.0
11.	S11	.7056	.4564	394.0
12.	S12	.5863	.4931	394.0
13.	S13	.3046	.4608	394.0
14.	S14	.8629	.3443	394.0
15.	S15	.8832	.3215	394.0
16.	S16	.3909	.4886	394.0
17.	S17	.7538	.4313	394.0
18.	S18	.6015	.4902	394.0
19.	S19	.5457	.4985	394.0
20.	S20	.5381	.4992	394.0
21.	S21	.4695	.4997	394.0
22.	S22	.7690	.4220	394.0
23.	S23	.7741	.4187	394.0
24.	S24	.8858	.3185	394.0
25.	S25	.9036	.2956	394.0
26.	S26	.7792	.4153	394.0
27.	S27	.4315	.4959	394.0
28.	S28	.9239	.2656	394.0
29.	S29	.4670	.4995	394.0

Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	.6047	.1447	.9315	.7868	6.4386	.0543

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
S1	16.9213	15.4722	.2735	.	.6893
S2	17.3909	16.0504	.2069	.	.6945
S3	17.0609	15.3754	.2889	.	.6880
S4	16.6726	15.9612	.2466	.	.6922
S5	17.3477	16.4309	.0550	.	.7043
S6	17.3477	15.9526	.2090	.	.6943
S7	16.9772	15.5033	.2574	.	.6907
S8	16.6041	16.3314	.1775	.	.6966
S9	17.0685	15.6518	.2168	.	.6941
S10	17.0051	15.0789	.3684	.	.6811
S11	16.8299	15.9532	.1637	.	.6979
S12	16.9492	15.1323	.3604	.	.6819
S13	17.2310	16.0152	.1439	.	.6995
S14	16.6726	16.0070	.2296	.	.6932
S15	16.6523	16.1561	.1930	.	.6954
S16	17.1447	15.6151	.2342	.	.6926
S17	16.7817	15.7792	.2314	.	.6927

25

S18	16.9340	15.8430	.1730	.	.6976
S19	16.9898	15.9846	.1317	.	.7012
S20	16.9975	15.6565	.2158	.	.6942
S21	17.0660	15.2170	.3313	.	.6843
S22	16.7665	15.7214	.2566	.	.6909
S23	16.7614	15.8666	.2148	.	.6939
S24	16.6497	16.1009	.2175	.	.6941
S25	16.6320	15.8515	.3482	.	.6878
S26	16.7563	15.4774	.3392	.	.6851
S27	17.1041	15.5744	.2396	.	.6922
S28	16.6117	16.2178	.2197	.	.6946
S29	17.0685	15.9215	.1473	.	.6999

Appendix 5

Item Statistics of Parental Involvement Scale

		Mean	Std Dev	Cases
1.	P1	.9022	.2974	460.0
2.	P2	.9500	.2182	460.0
3.	P3	.9913	.0929	460.0
4.	P4	.7391	.4396	460.0
5.	P5	.9891	.1038	460.0
6.	P6	.8630	.3442	460.0
7.	P7	.8826	.3222	460.0
8.	P8	.9565	.2042	460.0
9.	P9	.8261	.3794	460.0
10.	P10	.1217	.3273	460.0
11.	P11	.2587	.4384	460.0
12.	P12	.1565	.3637	460.0
13.	P13	.0217	.1460	460.0
14.	P14	.4435	.4973	460.0
15.	P15	.0978	.2974	460.0
16.	P16	.9391	.2394	460.0

Item Means	Mean	Minimum	Maximum	Range	Max/Min	Variance
	.6337	.0217	.9913	.9696	45.6000	.1410

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
P1	9.2370	1.8413	.3545	.	.1903
P2	9.1891	2.0840	.1338	.	.2719
P3	9.1478	2.1698	.1367	.	.2843
P4	9.4000	1.6261	.3537	.	.1428
P5	9.1500	2.1583	.1536	.	.2812
P6	9.2761	1.7428	.3903	.	.1589
P7	9.2565	1.8164	.3404	.	.1873
P8	9.1826	2.0842	.1527	.	.2690
P9	9.3130	2.1109	-.0354	.	.3310
P10	10.0174	1.9474	.1766	.	.2486
P11	9.8804	1.8833	.1167	.	.2690
P12	9.9826	2.1435	-.0562	.	.3365
P13	10.1174	2.1910	.0083	.	.2981
P14	9.6957	2.2775	-.2058	.	.4338
P15	10.0413	2.2663	-.1550	.	.3555
P16	9.2000	2.2824	-.1711	.	.3460

27

Appendix 6

Fit Statistics for Final Model Depicted in Figure 2

```
INDEPENDENCE MODEL CHI-SQUARE = 950.998 ON 28 DEGREES OF FREEDOM
INDEPENDENCE AIC =    894.99772   INDEPENDENCE CAIC =   750.36602
       MODEL AIC =      9.91173           MODEL CAIC =   -88.23120


CHI-SQUARE =        47.912 BASED ON    19 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS LESS THAN 0.001
THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 48.098.


BENTLER-BONETT NORMED    FIT INDEX=         0.950
BENTLER-BONETT NONNORMED FIT INDEX=         0.954
COMPARATIVE FIT INDEX (CFI)        =        0.969
BOLLEN (IFI)             FIT INDEX=         0.969
McDonald (MFI)           FIT INDEX=         0.970
LISREL GFI               FIT INDEX=         0.963
LISREL AGFI              FIT INDEX=         0.931
ROOT MEAN SQUARED RESIDUAL (RMR)   = 425625.574
STANDARDIZED RMR                   =         0.047
ROOT MEAN SQ. ERROR OF APP.(RMSEA)=         0.057
90% CONFIDENCE INTERVAL OF RMSEA (       0.037,          0.077)
```

28

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)
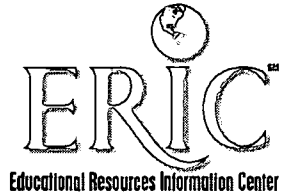
REPRODUCTION RELEASE
(Specific Document)

ERIC
Educational Resources Information Center

TM033907

I. DOCUMENT IDENTIFICATION:

Title: The effects of a web-based, Academic Record & Feedback System On student Achievement at the junior high school level

Author(s): Sonak, Zapre, Hunter, Suen

Corporate Source: Penn St. U.

Publication Date: April 2002

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents	The sample sticker shown below will be affixed to all Level 2A documents	The sample sticker shown below will be affixed to all Level 2B documents
PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) 1	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) 2A	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY Sample TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) 2B
Level 1 ↑ [X] Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) and paper copy.	Level 2A ↑ [ ] Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only	Level 2B ↑ [ ] Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

Sign here, → please

Signature: Bri C Sonak

Printed Name/Position/Title: BRIAN C. Sonak

Organization/Address: 225 Cedar Building U.P. PA 16802

Telephone: 814.865-6103

FAX:

E-Mail Address: bcs5@psu.edu

Date: 4/4/2002

(Over)

ERIC
Full Text Provided by ERIC

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, or, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

ERIC CLEARINGHOUSE ON ASSESSMENT AND EVALUATION
UNIVERSITY OF MARYLAND
1129 SHRIVER LAB
COLLEGE PARK, MD 20742-5701
ATTN: ACQUISITIONS

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706

Telephone: 301-552-4200
Toll Free: 800-799-3742
FAX: 301-552-4700
e-mail: ericfac@inet.ed.gov
WWW: http://ericfacility.org

ERIC 088 (Rev. 2/2001)