

Running Head: EVALUATION OF LEARNING ENVIRONMENT

Broadening the Roles of School Psychologists through an Evaluation of Learning
Environments: A Pilot Study

Jessica Kell Faulkner, Kelly D. Bradley and Janet K. Lumpp

University of Kentucky

James W. Bradley

Lexington Community College

Abstract

It is well documented that although school psychologists are trained to be well rounded with many skills, they are generally confined to assessment in their daily practices in a school setting. Research has found that school psychologists are ready and willing to broaden their roles and would like to become more versatile in their work and more engaged with the every day functions of the school. One role outlined by the National Association of School Psychologists is the evaluation of classroom environments. The learning environment has been found to directly impact student outcomes. Due to minimal research in evaluation of learning environments by school psychologists, this pilot study has identified the teacher and student perceptions of the learning environment and has determined what factors are important for school psychologists to consider during this process.

Broadening the Roles of School Psychologists through an Evaluation of Learning
Environments: A Pilot Study

Given the overwhelming desire and need for school psychologists to increase their time in activities other than assessment, there is research and literature to support such aspirations of both school psychologists and the National Association of School Psychologists (NASP). The purpose of this research is to encourage the broadening of the school psychologist's role, particularly in the area of evaluating classroom learning environments. Research is limited in the area of formal evaluations of learning environments by school psychologists, thus; further research is needed to better understand teacher and student perceptions of learning environments. Recognizing teacher and student opinions will lead to an increase in classroom evaluations performed by school psychologists. Not only will school psychologists benefit from broadening their role as classroom evaluators, but also teachers and students will have a better chance to work to their maximum potential in the classroom.

Background Information

Roles of a School Psychologist

According to the NASP, the roles of school psychologists are varied and should include assessment, consultation, intervention, prevention, counseling research and planning, as well as the evaluation of learning environments. However, a discrepancy exists between expected roles outlined by NASP and the actual roles practiced by many school psychologists. For instance, assessment has become a dominant role and takes approximately half of school psychologist's time (Bramlett, Murphy, Johnson, & Wallingsford, 2002). Due to the discrepancy between expected and actual roles in school

psychology, research has shown there is perhaps, a reason for this irregularity in practice. One possible explanation is regional differences, such as training programs and state mandates (Hosp & Reschly, 2002). For example, training programs can utilize different orientations, such as a behavioral versus psychodynamic approach. Since practitioners typically find employment in the same state as their training program, a program with specific frameworks or orientations can affect practice (Hosp & Reschly). State mandates can also influence school psychology practices regarding special education eligibility funding, requirements, and procedures. According to the literature, the biggest differences in regions lie within the average role for practitioners. In some regions such as the Northeast and Mid-Atlantic, more projective and personality measures are used in conjunction with direct interventions. In contrast, the average role in the South Atlantic and East South Central regions involves more time devoted to assessment, including additional IQ and achievement measures (Hosp & Reschly). Despite these differences, there still remains an overwhelming consistency regarding preferred roles, student gender, and psychologist-student ratios within the profession. School psychologists, regardless of regional location, still report wanting to perform more direct intervention, consultation, and research. In addition, approximately 80% of school psychology students are female and no region of the U.S. enforces the NASP suggestion of the 1:1,000 school psychologists to student ratio (Hosp & Reschly). Although regional differences have been found to contribute to variations in practice, there is an overwhelming message from practitioners to engage in roles other than assessment and follow the recommendations outlined by NASP. Given the abundance of research in this area, it has been documented

that school psychologists are overwhelmed with assessment and are looking to expand their roles (Gilman & Gabriel, 2004).

Evaluation of Learning Environments

Evaluating the learning environment is one role outlined by NASP that is critical to student learning. A learning environment includes physical surroundings, psychosocial or emotional components, social, and cultural influences that exist in a learning situation (Barker & Garvin-Doxas, 2004). Classroom environment factors have been found to be particularly influential on student results (Ozay, Kaya & Fatih, 2004). More specifically, research over the past 30 years has shown that the classroom environment is a strong determinant of student learning. It has been documented that student perceptions of their classroom have been shown to account for considerable amounts of variance in learning outcomes; specifically, students learn better when they perceive their classroom positively (Dorman, Joan & Ferguson, 2002). Based on the expertise and motivation of school psychologists to expand their every day roles, evaluating learning environments could enhance both school psychologists' outcomes, as well as, teachers' and students' success in the classroom.

Understanding and assessing the classroom environment is important for school psychologists for many reasons. A positive school climate is a vital piece of an effective school. The classroom environment has been shown to have a strong impact on student development and learning. Improving the learning environment is a preventative approach versus a reactive approach. Lastly, school psychologists are encouraged to promote changes within the school system (Lehr & Christenson, 2002). For instance, a

positive school climate has been consistently shown to impact academic effectiveness and has been viewed as a characteristic of an effective school.

NASP outlines a mission for school psychologists that states, “to promote educationally and psychologically healthy environments for all children and youth...” (Lehr & Christenson). It has been shown that when the climate of the classroom is positive, students will have higher achievement, more positive self concepts, better behavior and increased goals for the future (Lehr & Christenson). Taking a preventative approach as a school psychologist has many implications for students and the overall success of a school. To support teachers and students, classroom evaluations can take place early in the school year before problems occur, in turn, reducing the number of behavior and learning difficulties, as well as reducing the number of special education referrals. Offering a preventative approach has been viewed as an indicator of positive school climates (Lehr & Christenson). Additionally, it is expected that school psychologists act as leaders in their school districts to promote change and initiate, support, and evaluate efforts to improve the school climate.

One of the ten domains outlined by NASP for training and practice of school psychologists is “School Structure, Organization, and Climate.” (Lehr & Christenson). Given the previously mentioned aspects of a positive school climate and the role of school psychologists within that climate, it is pertinent that school psychologists realize their potential influence on the classroom environment, which can impact the overall outcomes for students, teachers, and schools. Thus, research associated to the classroom learning environment is necessary to implement effective, research based evaluations in school settings.

Methodology

Data Source

The sample for this research consists of teachers and students from a variety of towns from the southeast region of Kentucky, who were participants in the 'Girls in Science' program located at the University of Kentucky. The teacher sample consisted of 20 teachers, 17 of whom were female and 3 of whom were male. The teachers taught Science, Math, English, History, Technology, as well as other courses, with the majority taught to grades six through eight. The student sample consisted of 57 students, most of whom were entering the 8th grade and received grades of A's or B's in their math and science classes. This research will be one component of a broader research study, the Kentucky Electronics Education Project (KEEP), which is being funded through a University of Kentucky grant, *Pilot Study: Math, Science and Technology Professional Development Training of Pre-Service and In-Service Teachers Utilizing a Microelectronics Theme*.

Instrumentation

Data was collected using teacher and student ratings, collected via a selected-response pencil-and-paper survey. The teacher ratings were collected from a survey including sections titled: demographics, learning environment, teaching style, and experience with specific activities. The learning environment and teaching style sections are predominately composed of Likert-type scales where respondents rate their levels of agreement with each statement by selecting Strongly Disagree (SD), Disagree (D), Agree (A) or Strongly Agree (SA). Other questions sought responses such as Not Important (NI), Somewhat Important (SI) or Very Important (VI). The student ratings were also

collected from a survey including sections titled: demographics, learning environment and experience with specific activities. Surveys were constructed using e-Listen computer software. For purposes of this research, demographics, learning environment, and teaching style were evaluated on both the teacher and student survey. The questions pertaining to the learning environment and teaching style have been found in the research to be pertinent aspects of a classroom environment and student learning (Deemer, 2004; Fisher & Waldrup, 1999; Scott & Hannafin, 2000; Thuen & Bru, 2000).

Data Collection and Analysis

Data were collected using e-Listen software (data pump). Every individual, all teachers and students that received a survey completed it, resulting in a response rate of 100%. The high response rate was due to the survey being completed at the end of a training session. Still, all responses were deemed valid and appeared to be completed with much thoughtfulness. Given this is a perception survey instrument; missing data will be treated as such as it is reasonable for the teachers and students not to respond to every item. Descriptive statistics were calculated and summaries of the survey questions are presented in tables.

For student and teacher surveys, a frequency distribution and descriptive statistics were computed for each question. Correlation estimates were also calculated for each pair of questions. Due to the relatively small sample size, the pilot nature of the study, and the variability in the format of the questions, reliability estimates are not reported. More so, it is reasonable to use the correlation estimates to review the stability of the instrument, since reliability is a mathematical function of all pair-wise correlation estimates.

Below, Table 1 refers to the descriptive statistics of the student survey questions and responses that have been deemed noteworthy for this research based on a 4-point Likert scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree.

Statements Related to Classroom Learning Environment	n	Mean	SD
I enjoy the atmosphere in my classroom.	55	3.35	0.55
I learn about different cultures in my classroom.	54	2.65	0.83
The desks in my classroom are arranged in groups.	55	2.87	0.92
We use technology in my class.	54	3.20	0.68
I am asked to discuss how my experiences relate to the lesson.	52	2.88	0.81
We do group work often in my class.	56	3.30	0.68
Chairs are arranged in rows in my classroom.	54	2.67	1.05
I think the class assignments are meaningful.	57	3.21	0.62
My teacher often asks for student feedback that relates to the lesson.	50	3.04	0.73
I am encouraged to ask questions in my class.	57	3.26	0.72

As shown above, the average student response for this sample indicates general satisfaction with their classroom learning environment. It is reported that technology is used, group work is implemented often, class assignments are viewed as meaningful and student feedback is encouraged. Even so, there were average responses reported between “disagree” and “agree”; these average ratings also had greater variation among students’ ratings. For instance, learning about different cultures, chairs being arranged in rows and groups and being asked to discuss how experiences relate to the lesson. The response with the largest standard deviation referenced chairs being arranged in rows, likely indicative of differences in classroom design, as stated by several students.

Moderate positive correlations support the likelihood of students responding consistently to numerous items. Table 2 presents the moderate correlations computed for the student survey.

Statements related to Classroom Learning Environment	CORRELATION
I enjoy the atmosphere in my classroom. & We use technology in my class.	0.57
We use technology in my class. & I think the class assignments are meaningful.	0.52
I discuss how my experiences relate to the lesson. & The class assignments are meaningful.	0.50
We use technology in my class. & I am encouraged to ask questions in my class.	0.53
I think the class assignments are meaningful. & I am encouraged to ask questions in my class.	0.51

As shown above, the strongest correlation suggests that students who answered a certain way to the statement “I enjoy the atmosphere in my classroom” will also answer similarly to the statement “We use technology in my class”. This correlation might imply that students who enjoy their classroom also use technology in their class. There is research that supports the use of technology in the classroom and is viewed as an element of a successful learning environment (Mills & Tincher, 2003). Other moderate correlations could be indicators that students who use technology in their class also believe that class assignments are meaningful and are encouraged to ask questions. In addition, students who believe class assignments are meaningful might also be encouraged to ask questions and discuss how their experiences relate to the lesson.

Teacher Survey

In the teacher survey, the following descriptive statistics were calculated based on a 3-point Likert scale examining teaching style opinions, where 1 = Not Important, 2 = Somewhat Important, and 3 = Very Important. Table 3 refers to the descriptive statistics of the teacher survey with regards to teaching style.

Statements related to Teaching Style	N	Mean	SD
Using hands-on activities.	20	3.0	0
Connections to real world & careers.	20	2.6	0.31
Using multiple strategies for students with different interests/abilities.	20	2.95	0.22
Giving clear instructions to the class.	20	2.95	0.22
Offering help to a student when a concept or problem is difficult.	20	3.0	0
Expressing appreciation of each student's work.	20	3.0	0
Monitoring individual progress on a daily basis.	19	2.89	0.32
Walking around the room to provide close proximity to each student.	19	3.0	0

As shown above, the average response for the teaching style questions were mostly viewed as “very important”, such as using hands-on activities, offering help to a student when a concept or problem is difficult, expressing appreciation of each student's work, and walking around the room to provide close proximity to each student. These teaching style opinions show that based on the given sample, teachers view strategies that are student-directed and sensitive to students' needs as very important.

Table 4 refers to the descriptive statistics calculated based on a 4-point Likert scale examining teaching style with 1 = Strongly Disagree to 4 = Strongly Agree.

Statements related to Teaching Style	N	Mean	SD
Hands-on activities are helpful, but the real learning comes from reading and discussing the material in the textbook.	20	1.65	0.59
Cooperative group work makes it easier for students to learn.	20	3.05	0.39
Teachers should focus more on portfolios, journals, and open-ended problems to assess student learning rather than traditional tests.	20	2.55	0.51
Logical reasoning and positive attitudes are as important to learn as specific facts and skills.	20	3.35	0.49
.. I am unable to allow students to explore personal interests.	19	2.68	0.58
... I do not have time to allow for alternative teaching strategies.	20	2.4	0.60
External tests play a major role in determining what I teach.	20	2.9	0.64
... I have little time to include additional topics.	20	3.0	0.73
My teaching style has a strong impact on student learning.	20	3.35	0.49

As shown above, the teacher's average response indicates that teaching style is a vital part of student learning in many ways. A common theme in these findings suggests that many teaching strategies are important, and there are also external factors that

influence what is being taught. For instance, many factors are considered when teaching such as positive attitudes, logical reasoning, group work, and hands-on learning. In addition, there were responses suggesting that external factors influence what is taught on a regular basis. For example, responses show that external tests play a major role on what is taught, thus, there is little time to teach additional topics other than material students are tested on. One area that teachers seemed undecided on was whether portfolios, journals, and open-ended responses should be used for grading instead of traditional tests.

Table 5 refers to the descriptive statistics based on a 4-point Likert-type scale examining teacher opinions and agreement of their learning environment with 1 = Strongly Disagree to 4 = Strongly Agree.

Statements Related to Classroom Learning Environment	N	Mean	SD
I like my teaching environment.	20	2.90	0.85
I enjoy what I teach.	20	3.55	0.51
Learning environment impacts academic achievement.	20	3.75	0.44
My classroom environment encourages cultural diversity.	19	3.26	0.65
The seating arrangement in my classroom is organized so students can collaborate.	20	3.40	0.68
Technology is used to assist learning in my classroom.	20	3.25	0.55
My students are encouraged to discuss how their experiences relate to the daily lesson.	20	3.30	0.57
Group work is implemented on a regular basis in my classroom.	20	3.45	0.61
My classroom environment is viewed positively by the students.	20	3.35	0.49
Seats in my classroom are arranged in traditional lecture format (desks are in rows).	20	1.50	0.83
Most students in my classroom perceive class assignments as meaningful.	20	3.10	0.31

As shown above, the average response regarding the teacher's learning environment indicates that overall, teachers and students have positive views of their learning environment. According to the responses, teachers enjoy what they teach and are very interested in student involvement and interaction. Examples of such student involvement include: encouragement of cultural diversity, group work on a regular basis, integration of technology in class, and endorsement of student feedback. In addition,

teachers indicated that most students view assignments as meaningful and the classroom as positive. The statement “I like my teaching environment” yielded an average response that was lower than most other responses and varied quite a bit between teachers. Based on the sample, this suggests that teachers are happy with their teaching environment, but there is room for improvement.

Correlations for each pair of questions on the teacher survey were conducted, and Table 6 refers to the strong correlations that were found.

Statements Related to Classroom Learning Environment	CORRELATION
My teaching style has a strong impact on student learning. & Encouraging student questions is more important than eliciting correct answers.	0.73
My teaching style has a strong impact on student learning. & My classroom environment is viewed positively by the students.	0.78
I like my teaching environment. & I have resources available to incorporate technology in my classroom.	0.71

As shown above, the two strongest correlations imply that teachers who believe their teaching style has a strong impact on student learning also believe that their classroom is viewed positively by students and that encouraging student questions is more important than obtaining correct answers. In addition, the teachers who like their teaching environment are also likely to have resources available to incorporate technology into their classroom. The technology findings are interesting, as it reiterates student responses, where students who like their learning environment also use technology in their class. Table 7 refers to this and other moderately correlated pairs.

Learning Environment 14

Statements Related to Teaching	CORRELATION
Including the current year, how many years have you taught? & Hands on activities are helpful, but the real learning comes from reading and discussing the material in the textbook.	0.64
Using multiple strategies for students with different interests/abilities. & Monitoring individual progress on a daily basis.	0.69
Hands on activities are helpful, but the real learning comes from reading and discussing the material in the textbook. & Group work is implemented on a regular basis in my classroom.	-0.57
Encouraging student questions is more important than eliciting correct answers. & Concepts are learned better when they arise from students' experiences.	0.57
Encouraging student questions is more important than eliciting correct answers. & My classroom environment is viewed positively by the students.	0.57
Due to the required curriculum and time constraints, I do not have time to allow for alternative teaching strategies. & External tests play a major role in determining what I teach.	0.52
External tests play a major role in determining what I teach. & Since I have to cover all the topics students will be tested on, I have little time to include additional topics.	0.68
Due to the required curriculum and time constraints, I do not have time to allow for alternative teaching strategies. & I enjoy what I teach.	-0.59
Due to the required curriculum and time constraints, I am unable to allow students to explore personal interests. & Learning environment impacts academic achievement.	-0.54
I enjoy what I teach. & My classroom environment encourages cultural diversity.	0.52
I like my teaching environment. & Technology is used to assist learning in my classroom.	0.62
Due to the required curriculum and time constraints, I am unable to allow students to explore personal interests. & My students are encouraged to discuss how their experiences relate to the daily lesson.	-0.51
Due to the required curriculum and time constraints, I am unable to allow students to explore personal interests. & Group work is implemented on a regular basis in my classroom.	-0.55
Due to the required curriculum and time constraints, I am unable to allow students to explore personal interests. & My classroom environment is viewed positively by the students.	-0.62
My teaching style has a strong impact on student learning. & Seats in my classroom are arranged in traditional lecture format (desks are in rows).	-0.59
Due to the required curriculum and time constraints, I am unable to allow students to explore personal interests. & My classroom is student directed.	-0.57
Learning environment impacts academic achievement. & The seating arrangement in my classroom is organized so students can collaborate.	0.70
My classroom environment encourages cultural diversity. & I have easy access to technology to assist learning in my classroom.	0.52
Learning environment impacts academic achievement. & "My students are encouraged to discuss how their experiences relate to the daily lesson.	0.52
My classroom environment encourages cultural diversity. & My students are encouraged to discuss how their experiences relate to the daily lesson.	0.65
Learning environment impacts academic achievement. & Group work is implemented on a regular basis in my classroom.	0.64
The seating arrangement in my classroom is organized so students can collaborate. & Group work is implemented on a regular basis in my classroom.	0.69
The seating arrangement in my classroom is organized so students can collaborate. & My classroom environment is viewed positively by the students.	0.51
My students are encouraged to discuss how their experiences relate to the daily lesson. & My classroom environment is viewed positively by the students.	0.55
The seating arrangement in my classroom is organized so students can collaborate. & Seats in my classroom are arranged in traditional lecture format (desks are in rows).	-0.69
Group work is implemented on a regular basis in my classroom. & Seats in my classroom are arranged in traditional lecture format (desks are in rows).	-0.54

As shown above, there are many questions that are moderately correlated. Interestingly, the strongest moderate, positive correlation showed a relationship between the amount of time an individual has been teaching and the more likely to respond in favor of students reading and discussing the text versus hands-on activities. For example, teachers who had taught for a long period of time also responded in support of more traditional strategies such as reading and discussing text instead of hands-on activities. There were also responses indicating that many teachers and students were in favor of a collaborative learning environment. Such responses supported group work, student collaboration, class discussion, and cultural diversity. The teachers, who responded in support of these classroom approaches, also agreed that the learning environment strongly impacts academic achievement. The students who supported these collaborative approaches, also tended to view their classroom as positive. A correlation was found suggesting teachers who do not believe that teacher style has a strong impact on learning are also teachers who arrange the desks in a traditional lecture format. Teachers who responded as enjoying their teaching environment also responded as using technology in the classroom. There were many correlations found between questions referring to required curriculum and tests, and the flexibility of implementing additional teaching strategies or allowing students to explore personal interests. These correlations indicate that the required curriculum and standardized tests play a role in determining teacher's daily instruction, prevent students from learning other materials, deters group work, and creates a more teacher-directed learning environment.

Limitations

As with any survey, the potential exists that the respondents will answer, as they believe the researcher expects them to answer. To counter this issue, anonymity was ensured for all respondents, which increases the likelihood of valid responses. Another limiting factor was the targeted samples of teachers and students who participated in the training session. The sample cannot be applied to the general population; however, due to the pilot nature of the study, it provides a foundation to build upon with possible implications for the broader educational community.

Discussion

Based on the results of both teacher and student surveys, there are some interesting findings for both teachers and school psychologists. According to the student survey, the use of technology in the classroom and the inclusion of student questions, feedback, and overall participation appear to be important to students, as well as, an existing feature of classrooms. Students seem to enjoy their learning environments, perceive their daily lessons as important, and participate in group work and class discussion. An area that does not seem as strong according to the student survey is learning about other cultures.

According to the teacher survey, there are many positive conclusions regarding teacher perceptions of their classroom and teaching styles. There was an overwhelming agreement that the learning environment and one's teaching style, impacts academic achievement. In addition, many teachers seem to enjoy what they teach. While it appears that there is much support for collaborative learning environments, there is also some

support for traditional settings where desks are arranged in rows, primarily traditional tests are used, and hands-on learning is minimal. However, teachers who are generally pressured to meet standardized objectives are usually supportive of traditional tests (Scott & Hannafin, 2000). Other significant findings suggest that while teachers are somewhat happy with their teaching environment, they are limited in their teaching strategies and lessons due to external tests and curriculum and time constraints. This leaves little to no room for additional student interests. A consistent finding between both students and teachers was the correlation of enjoying their environment and using technology in the classroom.

Results indicate that the learning environment for students is perceived as conducive to successful student performance and are viewed positively by both students and teachers. The use of technology is present in classrooms and is a vital contributor to learning and enjoyment of the classroom by both students and teachers. An area of concern is the lack of flexibility teachers and students have due to the required curriculum and the external tests that play a major role in teaching students. There are positives associated with a required curriculum, such as consistency of material among classes and schools and the basic skills that are essential to continue to higher level courses and grades. The disadvantages of a required curriculum appear to be the limitations teachers experience as well as unexplored student interests, which could reduce student motivation in the classroom.

Conclusions

This study provides a starting point to consider the role of school psychologists in evaluating the classroom and supporting an effective learning environment. School

psychologists can use this information to evaluate classrooms and discuss these findings with teachers. By discussing the limitations schools are experiencing due to the required curriculum and tests, possible solutions could be introduced to satisfy both teacher requirements and student interests. These findings can provide school psychologists with a good understanding of how to evaluate classrooms and the important factors to be considered. If school psychologists and teachers can work together on this important issue, educational outcomes can be enhanced for students in addition to increased options for teachers by taking a preventative approach.

REFERENCES

- Barker, L. J. & Garvin-Doxas, K. (2004). Making visible the behaviors that influence learning environment: A qualitative exploration of computer science classrooms. *Computer Science Education, 14, 2*, 119-145.
- Bramlett, R. K., Murphy, J. L., Johnson, J. & Wallingsford, L. (2002). Contemporary practices in school psychology: A national survey of roles and referral problems. *Psychology in the Schools, 39, 3*, 327-335.
- Deemer, S. A. (2004) Classroom goal orientation in high school classrooms: revealing links between teacher beliefs and classroom environments. *Educational Research, 46, 1*, 73-90.
- Dorman, J. P., Adams, J. E. & Ferguson, J. M. (2002). Psychosocial environment and student self-handicapping in secondary school mathematics classes: A cross-national study. *Educational Psychology, 22, 5*, 499-511.
- Fisher, D. L & Waldrip, B. G. (1999). Cultural factors of science classroom learning environments, teacher-student interactions and student outcomes. *Research in Science & Technological Education, 17, 1*, 83-96.
- Gilman, R. & Gabriel, S. (2004). Perceptions of school psychological services by education professionals: results from a multi-state survey pilot study. *School Psychology Review, 33, 2*, 271-286.
- Hall, J. D. (2002). Contemporary practices in school psychology: a national survey of roles and referral problems. *Psychology in the Schools, 39, 3*, 327-335.
- Hosp, J. L. & Reschly, D. J. (2002). Regional differences in school psychology practice. *School Psychology Review, 31, 1*, 11-29.

- Lehr, C. A. & Christenson, S. L. (2002). Best practices in promoting a positive school climate. *Best Practices in School Psychology IV*, 2, 929-947.
- Mills, S. C. & Tincher, R. C. (2003). Be the technology: An developmental model for evaluating technology integration. *Journal of Research on Technology in Education*, 35, 3, 382-401.
- Ozay, E., Kaya, E. & Sezek, F. (2004). Application of questionnaire to describe teacher communication behaviour and its association with students in science in turkey. *Journal of Baltic Science Education*, 2, 6, 15-21.
- Scott, B. N. & Hannafin, R. D. (2000). How teachers and parents view classroom learning environments: an exploratory study. *Journal of Research on Computing in Education*, 32, 3, 401-416.
- Thuen, E. & Bru, E. (2000). Learning environment, meaningfulness of schoolwork and on-task-orientation among Norwegian 9th grade students. *School Psychology International*, 21, 4, 393-413.