OUT-OF-SCHOOL TIME READINGS - GUIDE

The following readings are a way for educators to learn about the characteristics of learning in an OST context. Marzano describes three student characteristics that positively relate to student achievement: setting high expectations, building academic background knowledge, and motivating students. For each of these student characteristics, we present three one-page readings for OST educators to learn more about these characteristics and how they can be applied in OST settings. This tool provides some guidance for using these readings with educators as part of their ongoing professional learning.

Goal

» Describe three characteristics of learning and how they can be applied in OST settings.

Materials

» Readings (pgs. 3-5):
- Academic Background Knowledge
- Communicating and Demonstrating High Expectations
- Motivating Students

» Instructor Tip Sheets (pgs. 6-7):
- Academic Background Knowledge Tips
- Motivating Students Tips

Time Required

» About 60 minutes: Each reading could take 20 minutes for participants to read, answer the questions, and discuss with colleagues

Advanced Preparation:

» Review the three one-page readings and the accompanying questions.

» Decide how you would like to engage educators in the readings (e.g., one reading at a time with the whole group, split up the readings amongst participants with each group responsible for one reading).

» Provide copies of the readings and tips sheets for each participant.

Procedure: Academic Background Knowledge

1. Pre-reading: What are some strategies you have used to build academic background knowledge with your students/youth?
2. Reading: As you read each article, think about how you have used the methods described in the past and how they can be used in an OST setting.
3. Post-reading questions: Discuss the following with your colleagues-
   - Why do you think building background knowledge is important in an OST setting?
   - Of the three methods discussed in the reading (i.e., authentic [direct] academic experiences, vicarious [indirect] academic experiences, and vocabulary instruction), which lend themselves well to OST learning? Why?
   - Which method might be the most challenging in OST? Why?
   - Review the Instructor Tips for Building Students' Academic Background Knowledge. How can you apply this information to your current role?
   - What questions do you still have about this characteristic?

Procedure: Communicating High Expectations

1. Pre-reading: What evidence have you seen in your experience that setting and communicating high expectations for student/youth learning can positively influence achievement? What examples where the opposite has been true?
2. Reading: As you read the one-pager, think about the roles that educators, parents, and mentors have in setting and communicating high expectations.
3. Post-reading questions: Discuss the following with your colleagues-
   - Why is it important for adults (i.e., parents/caregivers/teachers/mentors) to set and communicate high expectations for youth?
   - How might you engage with parents/caregivers of youth in your program about the importance of setting and communicating high expectations?
   - What role do instructors have in setting and communicating high expectations with youth in their programs?
   - How can you apply this information to your current role?
   - What questions do you still have about this characteristic?

Procedure: Motivation

1. Pre-reading: What are some ways you are motivated as a learner?
2. Reading: As you read the one pager, think about how STEM and career activities can be motivators for youth.
3. Post-reading questions: Discuss the following with your colleagues-
   - Why is motivation important when learning new material and persevering when learning becomes difficult?
   - What are some ways that STEM and OST learning can promote motivation in youth?
   - Describe how positive adult relationships can be important in motivation in youth.
   - Review the Instructor Tips for Motivation. How can you apply this information to your current role?
   - What questions do you still have about this characteristic?

Individual Wrap-Up:

» Write one goal for each of these characteristics that you can accomplish in your instructional setting.

References:

Marzano, R. (2000). A new era of school reform: Going where the research takes us. Aurora, CO: Mid-continent Research for Education and Learning. Marzano, R. J. (2003). What works in schools: Translating research into action. Alexandria, VA: Association for Supervision and Curriculum Development.

BUILDING STUDENTS' ACADEMIC BACKGROUND KNOWLEDGE

As reported in Building Background Knowledge for Academic Achievement[1], numerous research studies support the relationship between academic background knowledge—knowledge specific to a content area such as science—and academic achievement[2]. According to Marzano[3], "[e]nhancing a student's background knowledge is … one of the strongest determiners of academic achievement." Increasing students' academic background knowledge lays the foundation for learning new knowledge later: "The more you know, the easier it will be for you to learn new things"[4]. Methods for enhancing students' background knowledge include (1) authentic (direct) academically-oriented experiences (e.g., field trips, service learning, mentoring); (2) vicarious (indirect) academic experiences (e.g., online field trips, reading), and (3) vocabulary instruction[5].

The flexibility and longer blocks of time available in out-of-school-time programs allow students to experience a wide range of authentic and vicarious experiences to build their background knowledge. Authentic academically oriented experiences are those that provide enrichment and take place outside the school building. For example, students can participate in field trips to museums, planetariums, or local businesses, "which can help develop students' background knowledge and connect the real world to the in-class curriculum"[6]. Vicarious experiences are those that take place within the school building but expand students' horizons. Virtual field trips are one way to expose students to new environments; for example, students can explore the Egyptian pyramids via Google Earth or study the behavior and habitats of animals that live at the National Zoo by watching live Webcams. Further, "[g]ames projects, manipulatives, and computers provide practice and enrichment on content objectives"[7] and contribute to building academic background knowledge.

Increasing academic vocabulary is another way to increase student achievement. "As students expand their experiential and conceptual backgrounds, they also expand and refine their knowledge of words"[8]. Enriching authentic and vicarious experiences increase students' vocabulary. Conversely, the teaching of vocabulary is synonymous with teaching background knowledge[9]. In other words, the relationship between improved vocabulary and increased background knowledge is reciprocal. Vocabulary development aids in the comprehension of content area concepts. According to Young[10]:

Without a clear understanding of the language of the science content, students will certainly experience difficulty and a lack of interest with their science content-area material … [T]eachers can help students bridge the gap between the language of the science content and the language and background knowledge that students bring to the class.

In order to improve vocabulary, teachers must intentionally select appropriate words and then provide multiple exposures to these words in meaningful context.

Endnotes

1. Marzano, R.J. (2004). Building background knowledge for academic achievement: Research on what works in schools. Alexandria, VA: Association for Supervision and Curriculum Development.
2. Alexander, P. A. (2000). Toward a model of academic development: Schooling and the acquisition of knowledge: The sequel. Educational Researcher, 29(2), 28–33. Alexander, P. A., & Judy, J. E. (1988). The interaction of domain-specific and strategic knowledge in academic performance. Review of Educational Research, 58, 375–404.
3. Marzano, R. J. (2003). What works in schools: Translating research into action. Alexandria, VA: Association for Supervision and Curriculum Development, p. 136.
4. Willingham, D. T. (2006). How knowledge helps. American Educator. Retrieved December 24, 2009 from http://www.aft.org/pubs-reports/american_educator/issues/spring06/willingham.htm
5. Marzano, 2004.
6. Beckett, M., Borman, G., Capizzano, J., Parsley, D., Ross, S., Schirm, A., & Taylor, J. (2009). Structuring out-of-school time to improve academic achievement: A practice guide. P. 30. (NCEE#2009-012). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Educational Sciences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc/publications/practiceguides.
7. Ibid, p. 31.
8. Taylor, D. B., Mraz, M., Nichols, W. D., Rickelman, R. J. & Wood, K. D. (2009). Using explicit instruction to promote vocabulary learning for struggling readers. Reading & Writing Quarterly, 25(2), 205–220.
9. Marzano, 2004.
10. Young, E. (2005). The language of science, the language of students: Bridging the gap with engaged learning vocabulary strategies. Science Activities: Classroom Projects and Curriculum 42(2), p. 12.
11. Fisher, D., Grant, M., & Frey, N. (2009). Science literacy is greater than strategies. Clearing House: A Journal of Educational Strategies, Issues and Ideas, (82)4, 183–186. Taylor et al., 2009.

COMMUNICATING AND DEMONSTRATING HIGH EXPECTATIONS TO STUDENTS

Marzano1 describes three student characteristics that positively relate to student achievement: setting high expectations, building academic background knowledge, and motivating students. Evidence suggests that setting and communicating high expectations for student learning can positively influence achievement[2]. In one meta-analytic study, Fan and Chen[3] found that parent aspirations and expectations for their students' academic achievement had the strongest relationship with achievement[4]. Other research indicates that parents' expectations matched their actions, regardless of income level[5]. For example, compared to parents who had low expectations, parents who had high expectations for their children's classroom accomplishments read more often to their children and were more likely to make sure that their children borrowed books from the library during the summer[6]. In fact, parents' expectations were among the strongest predictors for every indicator of school achievement, including dropout, retention, and test scores, and were far stronger than the children's own expectations[7].

In addition, extensive research has been conducted on the protective factors and positive impact of caring adults, non-parent role models[8], and particularly teachers in children's lives[9]. Some research indicates that positive teacher expectations can have mitigating effects on low parent expectations, further reinforcing the important role of schools and out-of-school (OST) time settings in promoting high expectations[10]. Providing effective instructional support is one way that instructors can show students that they hold high expectations for their learning, care about them, and want to help them achieve their goals[11]. For example, instructors can ask about students' aspirations for the future, use high-level questioning techniques about school-related content, inquire about student attendance and participation challenges, and offer assistance in goal-setting. OST programs provide an opportunity to create an environment in which students interact with supportive adults who, in the context of the educational program, both supplement and complement parents' efforts to communicate high expectations for student achievement. Specifically, summer programs tend to have a lower student-to-teacher ratio than a regular school day classroom. Therefore, summer program instructors have a better opportunity to communicate their expectations and to build the relationships necessary for students to know that they have an adult who supports them.

Conveying positive and high expectations in the learning environment occurs at both a verbal and non-verbal level. Most obviously and powerfully conveyed is a teacher's belief that every student can be successful. By holding high expectations for every student and behaving in ways that are consistent with those high expectations, instructional staff adopts behavioral and instructional strategies that ensure consistency in the quality of their interactions with all students[12].

End Notes

1. Marzano, R. (2000). A new era of school reform: Going where the research takes us. Aurora, CO: Mid-continent Research for Education and Learning. Marzano, R. J. (2003). What works in schools: Translating research into action. Alexandria, VA: Association for Supervision and Curriculum Development.
2. Fan, X., & Chen, M. (2001). Parental involvement and students' academic achievement: A meta-analysis. Educational Psychology Review, 13(1), 1–22. Grossman, J., Campbell, M., & Raley, B. (2007). Quality time after school: What instructors can do to enhance learning. Philadelphia, PA: Public/Private Ventures. Entwisle, D. R., Alexander, K. L., & Olson, L. S. (2000). Summer learning and home environment. In R. D. Kahlenberg (Ed.) A nation at risk: Preserving public education as an engine for social mobility (pp. 9–30). New York: Century Foundation Press. Marzano, 2001, 2003.
3. Fan & Chen, 2001.
4. Ibid, p. 13.
5. Entwisle, Alexander, & Olson, 2000.
6. Ibid.
7. Ibid.
8. Grossman, Campbell, & Raley, 2007; Wood, D., Kaplan, R., & McLoyd, V. C. (2007). Gender differences in the educational expectations of urban, low-income African American youth: The role of parents and the school. Journal of Youth Adolescence, 36, 417–427.
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11. Grossman, Campbell, & Raley, 2007.
12. Marzano, R. (2006). The Art and Science of Teaching: A comprehensive framework for effective instruction. (p. 167). Alexandria, VA: Association for Supervision and Curriculum Development.

MOTIVATING STUDENTS

In educational terms, motivation is any mental process that initiates and maintains learning behavior[1]. Motivation is what encourages students to engage with new material and to persevere when learning becomes difficult; without it, students are unlikely to learn. Numerous studies point to the positive influence of motivation on student learning[2]. In particular, motivation to learn chemistry is a significant predictor of chemistry achievement[3].

To promote motivation and engagement, teachers must use what is known about high-quality science instruction. Students must actively engage in "doing" scientific inquiry: observation, interaction, problem solving, and experimentation[4]; they must also engage with peers about ideas, provide support for their theories, disagree and challenge each other, and rebuild their ideas as a result[5]. Strong science curricula provide students with tasks and activities that connect to the real world[6], engage their interests[7]; allow for student choice[8]; and offer learning opportunities that are open-ended in nature[9]. Specifically for out-of-school time, Beckett and colleagues[10] have identified providing engaging activities, student choice and autonomy, collaboration, "opportunities for fun," novel tasks that have personal meaning, hands-on activities, and tasks that build on individual talents as necessary elements for student motivation. Providing students with information about their progress also increases student motivation[11] and achievement[12].

Another way to foster motivation is to build close relationships between students and supportive adults[13]. One study noted that "[y]outh who experienced positive adult support enjoyed their [out-of-school- time] experience more, felt more engaged and perceived they learned more than those who experienced less adult support"[14]. Furthermore, the positive adult relationship increased the desire of high school students to attend the program; this is particularly critical at this age as high school programs compete against sports, jobs, and other interests. These positive adult-student relationships can be both emotional and academic[15]. Students who receive encouragement for their interest in science develop increased motivation, confidence in their science abilities, and more positive attitudes about science[16].

Endnotes

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Instructor Tips for Building Students' Academic Background Knowledge

- Provide students with authentic (direct) academically-oriented experiences, for example:
  - Field trips
  - Interaction with experts from the field
  - Service learning
  - Mentoring
- Have students participate in vicarious (indirect) academic experiences, for example:
  - Virtual field trips
  - Use of models and manipulatives
  - Reading
- Provide vocabulary instruction, for example:
  - Select the keywords you want to intentionally teach/reinforce.
  - Teach word meaning directly.
  - Provide opportunities for multiple exposures to vocabulary words.
  - Use reading material with vocabulary words embedded.
  - Play fun vocabulary games.
  - Have students create nonlinguistic (e.g., pictures, graphic organizers, physical models) or kinesthetic (e.g., body movement) representations of vocabulary words.

Instructor Tips for Engaging Students and Creating Conditions for High Motivation

- Foster relationships
  - Build close adult-student relationships
  - Support student-student relationships
- Provide engaging learning experiences
  - Make learning relevant to students; make real-world connections
  - Build on individual student interests and talents
  - Allow for student choice; create opportunities for students to help make decisions
  - Provide hands-on experiences
  - Incorporate novel tasks
  - Use tasks that are open-ended in nature
  - Incorporate collaboration and use of cooperative learning
- Use frequent assessment and feedback
  - Provide students with information about their progress
- Create a supportive physical and emotional environment
  - Make every student feel unique and secure
  - Provide recognition by praising effort and specific actions
  - Listen and show interest
  - Expect respect from all
  - Incorporate the use of music and movement