

Measuring Competencies Built Through Participation in Odyssey of the Mind: A Study of a Region in a Southern State

Sheri K. Bias¹ , Justin T. Bias², and Kimberly Beckerdite³

Abstract

Odyssey of the Mind is an international creative problem-solving program that allows participants to engage in spontaneous thinking and long-term analytical activities. This program has been in existence for 40 years and involved thousands of participants from around the globe. In September 2018, coaches and judges from a region in a Southern state from the 2017-2018 Odyssey of the Mind season were surveyed to determine the skills and competencies perceived to be built within the framework of this program. There were 10 core competencies that were identified from this study with teamwork, creativity, and problem solving being in the top.

Keywords

Odyssey of the Mind, building skills, competencies, teamwork, creativity

The landscape for skills and competencies demanded by organizations employing candidates is continually evolving. In fact, according to the 2018 Job Outlook survey conducted by the National Association of Colleges and Employers (NACES), critical competencies of problem-solving skills (82.9%), ability to work in a team (82.9%), written communication skills (80.3%), leadership (72.6%), and a strong work ethic (68.4%) were named as top contenders for what employers seek (NACES, 2018). These figures represent a slight change from merely 2 years ago when the results of the same survey yielded leadership (80.1) and ability to work in a team (78.9) as the most essential attributed (NACES, 2016).

Beyond the typical rigorous academics experienced by students, there is strong evidence around the need for the focus on soft skills when educating students and preparing them for life beyond secondary school. Lippman, Ryberg, Carney, and Moore (2015) define these soft skills as

... a broad set of skills, competencies, behaviors, attitudes, and personal qualities that enable people to effectively navigate their environment, work well with others, perform well, and achieve their goals. These skills are broadly applicable and complement other skills such as technical, vocational, and academic skills. (p. 11)

According to Kuhn and Weinberger (2005), being a leader in secondary educational environments often leads to success in the business arena. Furthermore, Glaeser, Laibson, and Sacerdote (2002) suggest that those with developed interpersonal and people skills have more success in jobs

with higher levels of social interactions. Lippman et al. (2015) also describe vital skills for success as being: “social skills; communication; and higher-order thinking skills (including problem solving, critical thinking, and decision-making); supported by the intrapersonal skills of self-control and positive self-concept” (p. 4).

The skills and competencies built through participation in Odyssey of the Mind (OoTM), at the various levels of competition, are precisely aligned with success beyond the secondary education environment. In September 2018, a survey was administered to coaches and judges in Virginia Region 6 to ascertain perceptions of the skills and competencies built while participating in OoTM. The result of the research conducted by the authors demonstrates the identification of 10 core skills and competencies as those identified by coaches and judges during the 2017-2018 competition season. These results, potential implications, and recommendations for future research will be discussed below.

OoTM—Framework for Competition

OoTM has engaged students in competition since 1978 and is an international creative problem-solving program that

¹Saint Leo University, FL, USA

²The College of William and Mary, Williamsburg, VA, USA

³Newport News Public Schools, VA, USA

Corresponding Author:

Sheri K. Bias, Saint Leo University, 33701 State Road 52, Saint Leo, FL 33574-6665, USA.

Email: sheri.bias@saintleo.edu

challenges students in their ways of thinking and learning. OoTM problems facilitate the building of self-confidence, development of life skills, and provide a platform for participants to have fun while learning (Creative Competitions, 2018). The OoTM platform allows participants of various demographics to participate in solving problems in a creative and constructive way.

Team Creation

OoTM teams comprised a maximum of seven participants and can be coached by teachers or parent volunteers. To ensure equity in the abilities of team members during the competition, OoTM differentiates teams by division depending on age and grade in school. The designation for a division is made based on the highest grade level of any participant in a team. For example, the following levels are defined to ensure competitiveness within each division (Creative Competitions, 2017):

- Primary division—kindergarten through second grade;
- Division I—third through fifth grade;
- Division II—sixth through eighth grade;
- Division III—ninth through 12th grade;
- Division IV—collegiate.

Teams can be designated in a variety of ways depending on the methodology used by the paying membership organization. For example, some organizations/school systems have tryouts for participation in teams. Others, particularly at the higher division levels, may seek volunteers for participation. One trend noticed has been less participation at the Division III and IV levels due to other competing activities and commitments. To compete at the Division IV level, all team members must have completed a high-school diploma or equivalent and be enrolled in at least one course at a 2- or 4-year college or university (Creative Competitions, 2017).

Structure of the Competitions—Long Term and Spontaneous

After the formation of the team, selection of a problem to solve is the next step. Each year, OoTM releases five different long-term problems that teams utilize as the basis for reaching a solution to the terms of their chosen problem. These long-term problems fall into the following categories: mechanical/vehicle, technical performance, classics, structure, and performance (Creative Competitions, 2018). It is expected that each solution will be unique to that team as there is no one right way to solve the problem.

A key facet of OoTM is the constraints faced by all teams of no outside assistance. Teams work together during a period of approximately 9 months to develop solutions to

their chosen long-term problem with consideration of project management variables such as budgets, deadlines, and resource management; all of which must be completed by the team members themselves. The solutions derived by the teams are performed at competitions in front of judges and typically involve set and prop design and construction, a theatrical performance, and any specialty portion of the solution (such as would be seen in the structure problem where a balsa wood structure is created within the constraints of the problem).

Another component of the competition in addition to solving the long-term problem is the spontaneous portion. During the spontaneous part of the competition, teams compete in problem-solving activities to derive a solution based on a problem presented to them upon entrance into the competition space. Therefore, while teams can practice spontaneous problem solving, there is no way to know what problem will be experienced during this segment of the competition. The types of spontaneous problems are either verbal, verbal hands-on, or hands-on formats and these are at the discretion of the OoTM program administrators. During this segment of the competition, teams are judged on their creativity in solving the problem, teamwork, as well as any identified requirements for their particular problem (such as building a bridge out of provided materials or the ability of a structure to hold a certain weight).

Competition Levels for Virginia participants—Region, State, and Worlds

The first level of competition in Virginia is the Region. Virginia is divided into eight regions spaced throughout the state, and not all counties participate in the OoTM program. Our particular research study focused on Region 6 in Virginia which comprised the following cities/counties: York County, Poquoson, Accomack, Gloucester, Sussex, South Hampton, Isle of Wight, Portsmouth, Virginia Beach, Hampton, and Newport News (Virginia Odyssey of the Mind, 2018). Teams in Divisions I and II who successfully place first in their problem advance to the state competition. Division III teams who successfully place first or second in their problem advance to state competition. Division IV teams automatically compete at the state level.

In addition, any team that receives a Ranatra Fusca Award (at any competition level) automatically advances to the next level. The Ranatra Fusca Award is “given to a team or individual for demonstrating outstanding creativity. This award embodies all that the Odyssey of the Mind program represents” (Creative Competitions, 2018).

Virginia’s eight regions participate in a state-wide competition where the teams who placed in the categories above compete again against other teams in the same division and problem. The regions of Virginia and the cities/counties they comprise are as follows:

- Region 4—Augusta, Tazewell, Bedford, Roanoke, Franklin, Henry, and Campbell;
- Region 6—York County, Poquoson, Accomack, Gloucester, Sussex, South Hampton, Isle of Wight, Portsmouth, Virginia Beach, Hampton, and Newport News;
- Region 9—Fairfax (North);
- Region 10—Spotsylvania, Louisa, Fluvanna, Goochland, Hanover, Henrico, Richmond, New Kent, King William, King and Queen, Middlesex, Essex, and Westmorland;
- Region 11—Alexandria, Falls Church, and Arlington;
- Region 12—Fauquier, Prince William, and Fairfax (South);
- Regions 14 and 16—Loudon.

At the state competition level, teams in any division who place first or second in their respective problems are allowed the opportunity to compete at World Finals. In addition, Ranatra Fusca winners at the state level automatically advance to World Finals competition.

World Finals is typically held within the United States with teams from all over the globe competing. In fact, in 2018, more than 835 teams from around the world competed at the OoTM World Finals (Creative Competitions, 2018). World Finals competition is a multiple day event in which teams perform their long-term problem solution and compete in another spontaneous activity. Teams placing in the Top 6 within their division and problem are announced at the end of the competition with awards given to the Top 3 competing teams.

Objective and Framework of Research Study

As an exploratory study, the purpose of this study is to investigate which skills and competencies were built within the framework of the OoTM program. Data for the study were collected only from Region 6 in Virginia as a long-standing participating area in the OoTM program. The description above outlines the OoTM program and demonstrates the need for further clarity and connection of participation in the program to potential success thereafter. The following question was used to guide the research efforts:

Research Question

What competencies and skills do coaches and judges in Virginia Region 6 Odyssey of the Mind program perceive as being developed through participation in Odyssey of the Mind?

The following research methodology is used to analyze data analysis and present the findings.

Survey Questionnaire

A survey was designed and developed based on the research question described above. The survey was anticipated to take approximately 5 min to complete and was divided into two sections. The first section of the survey gathered demographic information such as whether the respondent was a coach or judge for the 2018 competition. After that, the survey participant was asked about the number of years of involvement in the OoTM program. Another demographic question was on the problem that the respondent participated in for the Region 6 competition. For coaches, the survey asked whether they had coached the current problem in the past and which division, as well as whether they were a teacher and whether they coached multiple teams in 2018. An open-ended question asking why the respondent got involved with OoTM as well as a question asking if the individual was planning on continuing in the same role in the 2019 competition finished the demographic section.

The second section of the survey captured information regarding the skills and competencies thought to be built from participation in the program. A list of 30 skills and competencies was provided to respondents with instruction to select the 10 that were perceived to be gained from participation in the Odyssey program. This comprehensive list can be seen in the appendix. Survey participants were asked whether they had personally seen the skills selected develop in participants as well as being provided the opportunity through an open-ended question to be able to list any other skills or competencies they deemed important that were not mentioned in the list provided. In addition, respondents were queried about the perception about differences in skills and competencies by the long-term problem. In thinking forward to alignment of perceived skills and competencies with what employers, colleges, or other post-high-school opportunities, a question was asked regarding the transferability of these skills. The last question on the survey was open-ended asking about other comments or experiences the respondents wanted to share.

Sample

The sample comprised coaches and judges from Virginia Region 6 OoTM during the 2017-2018 competition year which equates to purposeful sampling. These individuals had participated in the capacity of either a team coach or judge which was noted during the registration for the Region 6 competition. Email addresses for coaches and judges were provided from the Region 6 Director and duplicates were eliminated so each unique email address received a survey invitation. Duplications would have been the result, for example, of a coach working with multiple teams. Participation in the survey was voluntary. The survey was distributed to 241 individuals based on these designations and 91 responded to the invitation for a 38% response rate.

Data Collection

The survey was conducted using Survey Monkey, and respondents answered the questions anonymously. A period of 2 weeks was allowed for respondents to complete the survey with an initial outreach email sent along with a reminder sent approximately 1 week in the timeframe for response. A unique email address for Region 6 OoTM was utilized as the sender of the survey along with the signature from the Association Director of Region 6 to provide validity to the research efforts. The results were then compiled and analyzed as per the discussion below.

Data Analysis

As previously mentioned, the goal of this research was to determine which skills or competencies the survey respondents felt had been built within the framework of OoTM which may be transferrable to other environments. Data analysis was completed using Survey Monkey compilation of the information as well as manual trend analyses by the researchers. Below are the results from the survey:

1. General Results
 - a. 91 respondents out of 241 surveyed (38%)
 - b. Demographics
 - i. 45% of the respondents were coaches and 55% were judges.
 - ii. There were representative respondents from each problem and each division with the exception of Division IV. No participation in Division IV for this survey.
 - iii. Average respondent participation in the Odyssey program was between 2 and 4 years.

Top skills identified by Odyssey participation (given a comprehensive list, respondents selected their top 10 they felt were most beneficial gained from participation):

1. Teamwork (94%)	6. Public speaking (53%)
2. Creativity (82%)	7. Leadership (51%)
3. Problem solving (78%)	8. Compromise (46%)
4. Planning and organization (64%)	9. Oral communication (44%)
5. Time management (58%)	10. Adhering to constraints or parameters (41%)

Discussion

Based on the identification of the skills and competencies referenced in the top 10 above, the respondents validated universal insights regarding the impacts of OoTM participation. Previous scholarly articles reflecting on the nature

of these impacts, as referenced by Wasik and Barrow (2017), note:

Regardless of the score rankings of a team on competition day, developing, negotiating, and experiencing effective teamwork and learning to successfully collaborate around a common goal over the course of the OotM program are a few of the potential benefits of participation. Furthermore, the OotM experience provides an educational and experiential platform for students to learn, practice, and develop skills and competencies around adaptability, critical thinking empathy, time and money management, creativity, and perseverance. Given the scope of the program, ease of adoptability into a school, and relative cost-effectiveness, the OotM program offers a unique and affordable solution where students learn, develop, and create highly transferable skills, experiences, and competencies helping them become more career-ready and better prepared to engage into the global workforce. (p. 49)

Wasik and Barrow merely had their observations of the OoTM program without the facilitation of any research to substantiate their claims. Given that OoTM has been in existence for 40 years, intuitively it stands to reason that there are benefits to participants which then transfer to environments beyond the realm of the program.

In addition, some verbatim comments from survey respondents that substantiate the benefits of OoTM can be seen in the following. The survey was conducted anonymously so no identifying information will be provided:

- “The best overall experience out there for students—the only drawback is that it is limited to 7 students.”
- “Students who stuck with the program for multiple years made great strides in those skills listed above. I even saw the benefits as they entered college and adulthood.”
- “These children are extremely talented in so many ways and I am grateful there is a program like this that allows children to challenge themselves!”
- “Odyssey of the Mind has helped my own children as they became adults to attempt to solve problems instead of walk away from them.”
- “This program is a great alternative to sports.”
- “It is an amazing program that provides kids the opportunity and environment to learn how to think out-side-the-box to solve problems both creatively and artistically.”
- “If employers want people to “think outside the box,” these are your problem solvers. They are good at compromise, evaluating solutions, and rapid adjustment to changing conditions.”
- “Odyssey of the Mind posture individuals for critical thinking, problem solving, and adapting to a forever

changing environment. The overarching themes of self-discipline and situational awareness to adapt and overcome are paramount skills for success with the impacts of globalization and digital citizens.”

- “Learning to follow thru even if the plan doesn’t work out as you thought. Standing on stage, knowing your team mates depend on you, forgetting your lines or to move a prop and improvising to try and make it work. Learning to read another’s actions and follow up to further the improvised plan for the common goal.”
- “Ootm provided real world skills. Together students have to work together to solve a problem. They have to work through their creative differences and compromise. Ootm can be very emotional due to the time put in. Something always wrong at the worst time, having to adjust and think on your feet is just like real life. Things go wrong, how will you handle that.”
- “Managing personal relationships between team members can be difficult, but as the teams progress they have to realize they must come to terms with the other’s personalities and work together towards a common goal. I see this being beneficial in their futures concerning getting along with [sic] those in the workforce.”
- “I absolutely love sharing the Odyssey of the Mind experience with my students. I wish we had the resources and time to give the experience to every student who is interested!”

One repeating theme from these results is the inability to allow the opportunity to all students who desire to participate. Teams are limited to seven participants and the systems that participate may be limited as far as resources such as the ability to purchase additional memberships or merely teachers or parent volunteers to coach teams. There is equality to the competition space in that each team is constrained to a maximum of seven participants; yet, teams can also compete with fewer than seven participants. Decisions regarding participation are typically made by the school systems that influence the number of participants and coaches (resources).

Another repeating theme from these results is the transferability of these skills and competencies to beyond the OoTM program. Based on the information discussed above from the NACES (2018), these skills and competencies will be in demand for organizations seeking candidates for hire within their entity. It is well understood that the workplace is constantly and rapidly changing. Bortz (2018) shared insights on the current skills and competencies that employers seek and among these are problem solving, creativity, resilience, and willingness to learn. According to Bortz (2018), problem solving is said to be invaluable

given the rapid changes of the work environment and allows employees to be able to demonstrate independence in being able to troubleshoot and solve new complex situations. Creativity is deemed as important as employers are looking for candidates who can derive new ways to approach a job. Resilience is trial and error and shows perseverance in situations. Willingness to learn and an appetite for gaining new knowledge are attractive to employers. These top skill and competencies identified by Bortz are the epitome of the OoTM program.

When survey participants were afforded the opportunity to provide narrative feedback regarding other skills that are built during OoTM program participation, resoundingly, one of the top comments was “building self-confidence.” Some of the verbatim comments that supported this notion were as follows:

- “Self-confidence I have seen kids who are so shy who barely speak. But blossom when doing their long term and spontaneous problems.”
- “Self-confidence. I have seen students who thought they could not do anything become group Leaders.”
- “Importance of keeping it fun! Techniques to building confidence of your work!”
- “Courage to present your ideas and handle when they are rejected or accepted.”

Another area that will serve OoTM participants well is the ability to deal with loss. OoTM is a competition; therefore, not all participants go home with a trophy just as in the workplace that not everyone receives a promotion. Learning to cope with loss and being able to overcome the loss is also important. Some of the verbatim comments that supported this notion were as follows:

- “Pride in accomplishment—win or lose I did my very best.”
- “Learning how to be a good sport. Finding out you can learn from failure. Resilience.”
- “The ability to lose and see it as a challenge to do better, to WANT to do better next time. Working with people whom you may not have chosen to work with before and becoming a viable, productive and supportive team.”
- “Persistence and good sportsmanship. The students have to stick to their efforts throughout the year and learn to get along with one another and different teams in competition.”
- “So many excellent skills were listed. One of the biggest benefits I see of program participants is overcoming adversity (dealing with failure . . . and knowing that failure is an essential component of success).”

Limitations

This survey focused on Virginia Region 6 OoTM coaches and judges. Therefore, the generalization of these results to other regions or beyond could be a stretch. However, there do seem to be commonly perceived skills and competencies that are built from participation in OoTM. In addition, no student participants were surveyed to ascertain their insights or experiences regarding OoTM. Furthermore, those with ancillary involvement, such as parent volunteers who were not formally registered in the OoTM competition landscape, could have valuable insights regarding skills and competencies built through the program. Further research is recommended to ascertain if these perceptions are consistent throughout the OoTM program, and thereafter, the desirability of these skills to other organizations such as employers and colleges more globally.

Future Research

As of the writing of this article, approval has been given by the Association Director for Virginia OoTM to conduct a state-wide survey to determine, on a larger scale if the skills and competencies identified in Region 6 are also perceived throughout the state. This research will include all regions previously described. Subsequent research efforts under consideration are to also gather this information from a comprehensive US perspective and potentially extend to the World Finals perspective.

In addition, the authors are working with leaders from the Society of Human Resources (SHRM) to design a survey that will utilize the results from the Virginia OoTM research regarding what skills and competencies employers within the state seek from candidates. The authors also anticipate collaborating with institutions of higher learning to determine the perception of the skills and competencies build through OoTM participation on success at college.

Conclusion

As an exploratory study, the purpose of this study was to investigate which skills and competencies were built during participation in the OoTM program. Our initial observations solidify the previous perceptions that had not been validated through previous research endeavors. These are critical skills and competencies that employers and colleges seek from those endeavoring to be a part of such institutions. This is valuable feedback to the academic community as well as the OoTM organization that can assist in understanding and furthering the development of such skills in participants. The next phase of the research is anticipated to broaden the pool of coaches and judges in a larger geographic area which will further solidify the value of participation in the OoTM program.

Appendix

Survey of Coaches and Officials From Odyssey 2017-2018 Season

Thank you for agreeing to participate in this brief survey. We are gathering data on teams, creativity, innovation, teamwork, and what skills may be transferable to the marketplace for employers. We need your feedback as a former Odyssey of the Mind coach or judge. The goal of this survey is to determine which skills or competencies you feel may be built within the framework of Odyssey of the Mind which could be transferable to other environments, marketplaces, and organizations.

Demographic Variables Questions

1. For 2018, what was your role?
 - a. Coach
 - b. Official
2. How many years have you been involved in Odyssey of the Mind (at the point of the 2018 Odyssey of the Mind competition)?
 - a. 1 year
 - b. 2-4 years
 - c. 5-9 years
 - d. 10 or more years
3. What problem were you involved in during the 2017-2018 Odyssey of the Mind season? (choose all that apply):
 - a. Primary
 - b. Problem #1
 - c. Problem #2
 - d. Problem #3
 - e. Problem #4
 - f. Problem #5
 - g. Spontaneous (if you were an official)
 - h. Other (any other role that was not directly involved with as problem at competition)
4. Have you coached or been involved as a judge with this problem(s) before the 2018 problem season?
 - a. Yes
 - b. No
5. If you are a coach, then what divisions were you involved with? (choose any and all that apply):
 - a. Primary
 - b. Division I
 - c. Division II
 - d. Division III
 - e. Division IV
 - f. NONE (No coaching involvement in 2018)
6. Are you a teacher?
 - a. Yes
 - b. No

7. Have you coached multiple teams in 2018 competition season or before?
 - a. Yes
 - b. No
8. Why did you originally get involved in Odyssey of the Mind? Explain:
9. Are you planning on continuing in the same role for this upcoming year (2019 Odyssey of the Mind Competition)?
 - a. Yes
 - b. No

Research Questions

This section will be used to gather data pertaining to the participants' involvement in Odyssey of the Mind. Researching how involvement has been beneficial to the participants in the program from the coaches' and facilitators' perspectives.

1. Do you think any of the following skills are perceived benefits of Odyssey of the Mind participation by its members? Select the 10 you think are most beneficial that are gained from Odyssey participation (please note that these are in alphabetical order only, so please be sure to review entire list):
 - a. Ability and flexibility to acquire new skills
 - b. Adhering to constraints or parameters
 - c. Analysis of given constraints (written words)
 - d. Compromise
 - e. Construction and craftsmanship
 - f. Costume design
 - g. Creativity
 - h. Engineering
 - i. Fiscal accountability
 - j. Inquiry of clarification
 - k. Integration of technology in solutions
 - l. Leadership
 - m. Mathematics
 - n. Multitasking
 - o. Oral communication
 - p. Planning and organization
 - q. Prioritization
 - r. Problem solving
 - s. Project coordination
 - t. Public speaking
 - u. Singing and/or dancing
 - v. Spontaneity
 - w. Stage and/or artistic design
 - x. Stage performance
 - y. Teamwork
 - z. Time management
 - aa. Usage and knowledge of tools
 - bb. Valuing of different perspectives

- cc. Writing
- dd. Written communication
2. Have you seen any of these skills you selected above develop in any participants you had contact with?
 - a. Yes
 - b. No
3. Do you believe that the learned skills you selected above, which you perceive as being beneficial, vary between the long-term problems that the participants are involved in?
 - a. Yes
 - b. No
4. Are there any other skills that you perceive as important which are gained from Odyssey of the Mind participation which were not listed above? Explain:
 - a.
5. In your opinion, how transferable are these skills that you have selected, from Odyssey of the Mind to college, the workplace, or other post high-school opportunities? (1-5 selection scale)
 - a. 1 (Not at all)
 - b. 2 (Very little transference)
 - c. 3 (Somewhat transferrable)
 - d. 4 (Mostly transferrable)
 - e. 5 (Extremely transferrable)
6. Are there any other comments about your Odyssey of the Mind experiences you would like to share? Explain:
 - a.

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ORCID iD

Sheri K. Bias  <https://orcid.org/0000-0002-5069-419X>

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