Future Problem Solving International Grant Application 2013

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Rationale

FPSP coaches want teams to function as smoothly as possible. Support for coaches from could streamline this process and enhance the teambuilding experience. Students' problem-solving styles can be assessed by *VIEW: An Assessment of Problem Solving Style* (VIEW), which was designed to determine how individuals may behave when managing change and solving problems (Selby, Treffinger, & Isaksen, 2007; Treffinger, Selby, Isaksen, & Crumel, 2007). The instrument may have applications to support creative problem-solving (Selby, Treffinger, & Isaksen, 2011). In addition, there is a need to substantiate effective ways to teach creativity, particularly for adolescents (Woodel-Johnson, 2010), and understanding problem-solving styles may support problem-solving (Selby, et. al, 2011).

Therefore, this study was developed to investigate how understanding and application of problem-solving styles in an FPSP Future Scene effects performance and process. This study could have an impact on FPSP curriculum materials and options for students and coaches particularly in the area of collaborative problem-solving.

Description of Project

This project is part of a research dissertation, which is under the direction of Dr. Donald J. Treffinger, Dr. Marcia A. B. Delcourt and Dr. Nancy N. Heilbronner. Subjects include 75 student participants, 32 males (42.7%) and 43 females (57.3%) in grades 9-12 and 1 coach. There are 15 students from the FPSP middle level (grades 7-9) and 60 students from the FPSP senior level (grades 10-12). The subjects are part of 21 FPSP-GIPS teams in one suburban high school in Connecticut. One certified teacher coaches all 21 teams. He has 34 years of teaching

experience and 28 years of experience as an FPSP coach. Participants are all identified as gifted by the district. FPSP is offered as a course for credit and is open only to students identified as gifted.

Goals

The purposes of this study are threefold. First, the researcher will attempt to determine if participation in training on problem-solving styles using VIEW (Treffinger et al., 2007) has an impact on performance in creative problem-solving (scores in FPSP-GIPS) for students in grades 9-12. The researcher will also analyze differences in performance and process. The perceptions about the creative problem-solving process regarding team and individual strengths and weaknesses in students and coaches who learn about their problem-solving styles and those who do not will be analyzed as well as the relationship between creative thinking ability, problem-solving styles training and performance in a Future Scene.

A potential benefit of the study may be an understanding of the benefits of training in problem-solving styles using VIEW in relation to performance in an FPSP Future Scene. Another benefit may be gaining an understanding of the perceptions of teams involved in training about their problem-solving styles as it applies to working collaboratively on an FPSP Future Scene. Finally, an understanding of the relationship between creative thinking ability and training in problem-solving styles as a predictor for performance on an FPSP Future Scene may be gleaned. All goals stand to have potential to inform programming and curriculum for FPSP.

Objectives

Based on the positive effects of creative thinking ability and the Future Problem Solving program, there was support for continued study of problem-solving styles as VIEW may help in understanding the role of personal style preferences in creativity and innovation (Isaksen,

Dorval, & Treffinger, 2011). By using a systematic approach, this study will examine the following research questions:

1. Is there a significant difference in Future Problem Solving Program Global Issues Problem Solving scores between students who are trained in understanding and applying their problem-solving styles and students who do not receive training about their problem-solving styles?
2. What are the students' perceptions of their working relationships as members of a Future Problem Solving Program Global Issues Problem Solving team?
3. To what extent will variation in Future Problem Solving Program Global Issues Problem Solving scores be predicted by fluency, flexibility, and originality scores on the *Torrance Test of Creative Thinking-Verbal*, after accounting for participation in problem-solving styles training?

Strategies/Activities

The research design is a mixed method using an explanatory sequential design (Creswell & Clark, 2011). The unit of analysis was the student, and intact groups of student FPSP-GIPS 3-4 member teams will be employed. The first research question will be analyzed using a quasi-experimental design. A pretest called the GIPS-PP2 produced a composite score will be used to determine initial equivalence of the groups. The independent variable will be participation in the VIEW training with two levels: treatment and comparison. The dependent variable will be the posttest called the GIPS-QP score. A one-way ANOVA will be used to analyze the results after establishing group equivalence.

For the second research question, a qualitative multi-case study design will be used. A questionnaire was given to all participants. Coding will be based on themes (Bernard & Ryan,

2010; Corbin & Strauss, 2008) to analyze the data. The analysis will be conducted between all students, and within teams. Follow-up semi-structured interviews will be conducted with selected participants, and the data will be analyzed by using initial coding, focused coding, and theoretical integration (Charmaz, 2006).

For the third question, a correlational design with a quasi-experimental component will be utilized. The TTCT-Verbal, Form A will be given to all student participants, and a hierarchical multiple linear regression equation will be conducted. The predictor variables will be: type of program (treatment or comparison), placed in the first block, followed by the set of fluency, flexibility and originality scores, which will be entered in the second block. The criterion variable was the GIPS-QP composite score.

Timeline

Data is scheduled to be collected from October 2012-February 2013 after the approval was obtained by the Western Connecticut State University IRB. Prior to collecting data, the researcher participated in the Evaluator's Training Session with FPSPofCT.

1. Spring 2012: VIEW user qualification completed
2. October 2, 2012: FPSPofCT Evaluator Training
3. October, 2012: Consent and Assent obtained
4. October 26, 2012: GIPS-PP1 was due to FPSPofCT.
5. November 2012: Demographic Surveys completed and teams assigned to groups;
6. November 30, 2012: GIPS-PP2 was due to FPSPofCT;
7. December 7, 2012: Treatment group completed VIEW;
8. December 11, 2012- December 13, 2012: Ninety minute training sessions for treatment group;

9. December 14, 2012-January 28, 2013: Coach's Log completed;
10. January 28, 2013: GIPS-QP was due to FPSPofCT;
11. February 5, 2013- Feburary 8, 2013: TTCT-Verbal, Form A
12. February 12, 2013-February 13, 2013: Questionnaire completed;
13. February 20, 2013- February 21, 2013: Follow-up semi-structured interviews conducted;
14. March 22, 2013: FPSPofCT State Bowl;
15. April 2013: VIEW offered to interested comparison group participants.

Budget

- VIEW User Qualification and Instruments = $400.00
  - The project will also receive partial support from the VIEW publisher.
- Torrance Verbal Starter Set 20 books plus directions, additional verbal booklets (60) plus shipping and handling = $222.69
- Torrance Verbal Manual for Scoring and Interpreting Results = $43.00
- Torrance Scoring Assistance Torrance Verbal $8.50 x 75 ($637.50) + 15% shipping and handling ($95.63) = $733.13
- HyperResearcher = $199.00
  - Technological assistance for coding analysis for the second research question.
- Interview Transcription assistance ($50 per interview x 4) = $200
  - This assistance will support efficient transcription of the audio files of the interviews to word documents. Transcriber: Jana Smith
- NoodleBib Subscription = $50
  - Technological assistance with citations and project organization

- Transportation 65.66 miles x 5 trips = 328.3 miles @ $0.565 per mile $185.49
    - Travel required to visit the site 5 times during the course of the research project.

Total: $2034.31

Evaluation Plan

For the first research question, a non-directional hypothesis: There will be a significant difference in Future Problem Solving Program Global Issues Problem Solving scores between students who were trained in understanding and applying their problem-solving styles and students who do not receive training about their problem-solving styles For research question 2, it is expected that there will be a qualitative difference in the responses by team members and coaches who were trained in the VIEW in their perceptions of team strengths, weaknesses and areas for improvement from students and coaches who did not participate. The results may benefit the Future Problem Solving Program International in that it may be able to enhance programming for collaborative problem solving with students by having them participate in VIEW training from a Qualified user as part of their programming.

For the third research question, a directional hypothesis: Future Problem Solving Program Global Issues Problem Solving scores will be significantly predicted by participating in problem-solving styles training and additionally by fluency, flexibility, and originality scores on the *Torrance Test of Creative Thinking-Verbal.* Implications for the Future Problem Solving Program may be that having students take this assessment may help them understand their unique strengths and weaknesses in the area of verbal creativity and may help them target their areas of strengths and weaknesses as they work through the Future Problem Solving Program.

This will also add to the research currently being conducted by Scholastic using the *Torrance Test of Creative Thinking-Figural*.

Results will be shared in the form of a dissertation defense, which is scheduled for March, 2014. The final dissertation will be available for publication in May, 2014.

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