

Development and Evaluation of a Web-Based Training Technique for Preparation of Participants in an Outcomes Research Practicum

M Yavari^{1,2}, GS Wagner¹, L Bacharova³

¹Duke Clinical Research Institute, Duke University, Durham, NC, USA

²Ishafan University of Medical Sciences, Isfahan, Iran

³International Laser Center, Bratislava, Slovak Republic

Abstract

The Scientific Summer School in Turkey (SSSiT) was presented in July 2007 as an outcomes research practicum (ORP) under the patronage of the Anatolian Journal of Cardiology, Croatian Medical Journal and the Journal of Electrocardiology. The purpose of the present study was to evaluate the effectiveness of preparation during the month prior to the SSSiT using an on-line Research Methodology Guide and ORP outline. The participants in the intervention group passed the preparation step by completing design of a practice outcomes research study. The online RMG was randomly provided to half of the participants in this preparation group. The SSSiT faculty members evaluated the performances of all participants after SSSiT. The results demonstrated that self-preparation method of research methodology using both ORP and RMG was effective in enhancing participants' performance during the practicum.

1. Introduction

The Scientific Summer School was designed to offer four workshops on developing skills for planning, preparation and running of scientific projects and preparation of manuscripts based on the training module used for Duke University pre-graduate and post-graduate training of students. There was a previous report of transfer of this teaching method developed by Davis et al in the Duke Clinical Research Institute (DCRI) into various settings outside of Duke University.¹ In 2006, The Scientific Summer School in Slovakia, showed a successful model of combination of the research practicum and the team building methods.²

As an outcome of the SSSiS success, the Scientific Summer School in Turkey (SSSiT) was presented in July 2007 under the patronage of the Anatolian Journal of

Cardiology, Croatian Medical Journal and the Journal of Electrocardiology. The aim of the Outcomes Research Practicum (ORP) was to develop the research skills of the summer school participants based on a practical, problem-based approach.

During the month before the SSSiT, some of practicum participants (the intervention group) passed a formal preparation stage, in which they were asked to design a research project with the help of the materials (ORP outline and Research Methodology Guide (RMG)) provided. The aim of the ORP and RMG was to develop the research skills of the participants based on a practical, problem-based approach, which its advantages to enhance learning in various fields of education has been well documented.³⁻⁶

Our hypothesis was that the intervention group will benefit from designing a project before the SSSiT, as they will be prepared for a higher level of learning during the workshop.

The purpose of the present study was to evaluate the effectiveness of preparation during the month prior to the SSSiT using an on-line Research Methodology Guide and ORP outline.



Figure 1. The Scientific Summer School in Turkey (SSSiT), 2007.

2. Methods

All eighteen SSSiT participants from six countries (Turkey, Slovakia, Serbia, Macedonia, Poland, Croatia), with professional medical backgrounds in oncology and radiology, pediatric cardiology, ophthalmology, cardiology, endocrinology, etc. were enrolled in our study.

Half of the participants passed the preparation step by completing design of a practice outcomes research study in their own area of interest, using the outlines of the four workshops included in the ORP for the SSSiT:

Workshop#1: Introduction to an Outcomes Research Study.

Workshop#2: Methods I: Study Population and Outcomes.

Workshop#3: Methods II: Data Collection and Analysis.

Workshop#4: Research Administration.

During the month prior to the workshop, the online RMG (figure 2) was also randomly provided to 5 of the participants in the preparation group so that they could use it as a self guide while designing the research study.

During the SSSiT the participants were divided into 4-5 member teams to design comprehensive, potentially achievable outcomes research projects. The SSSiT offered the four workshops as mentioned in the outcomes practicum outline. Each group designed a project based on their scientific and professional interests.

After SSSiT, Participants were asked to indicate “their knowledge and practice about research methodology before the Summer School”, “their experience in performing research projects before the SSSiT”, and “overall evaluation of the Summer School” using a Likert scale of 1=“the lowest” to 4=“the highest”. Surveys were distributed one week after workshop completion.

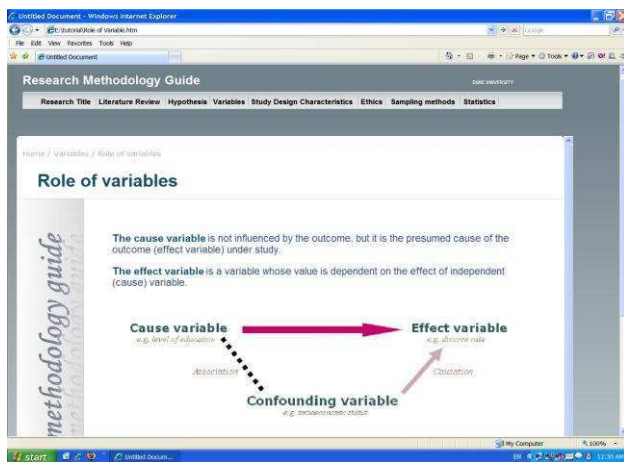


Figure 2. Research Methodology Guide website.

In addition, the six faculty members evaluated the performances of all participants after SSSiT, while blinded to whether the participants were in the intervention or control group. All the faculties filled out a participant performance evaluation form upon practicum completion. The evaluation form included five major fields of research methodology (study title, hypothesis, variables, study design, sampling and statistics). For each of the participants, the faculties rated the level of knowledge, understanding and ability to apply research methodology basis with regard to learning goals, for each of the five major fields, using a Likert scale of 1= “No knowledge”, 2= “Familiar with the concepts but not satisfactory”, 3= “Satisfactory but needs improvement” and 4= “Good”.

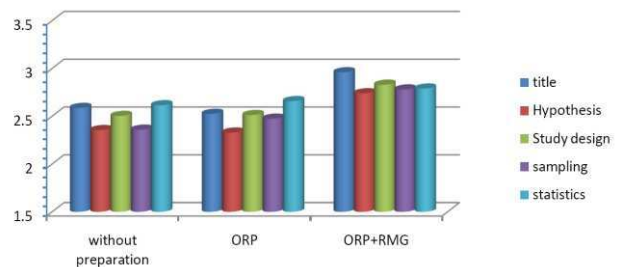


Figure 3. The mean of participants’ performance score in different research methodology fields for the control group, the Outcomes Research Practicum (ORP) group and the group with both ORP and Research Methodology Guide (RMG).

3. Results

Independent t-test between the group who passed the preparation stage before the SSSiT (mean score= 2.67) and the control group (mean score= 2.48) did not show a statistically significant difference in participants’ performance during practicum ($p>0.05$).

The same statistical analysis demonstrated that those participants who had access to the online Research Methodology Guide for the preparation process, had significantly better performance during SSSiT with a mean score of 2.82 than those who didn’t have (mean=2.48) ($p=0.04$). No specific difference was observed in different research methodology fields including title, hypothesis, variables, study design, sampling and statistics between groups (figure 3).

All of the participants evaluated their knowledge and practice about research methodology before the Summer School in a low level (with a score of 2 out of 4) and Similarly, all of them ranked their experience in performing research projects before the Summer School with a mean score of 2 out of 4.

The overall results of participants’ survey

demonstrated a high level of participant satisfaction about the summer school. The mean score of the participants overall evaluation of SSSiT was 3.33 out of a total score of 4.

4. Discussion and conclusions

There is a growing trend among medical educators towards the use of new learner-centered teaching and preparation methods, based on self-learning and with specific objectives. In contrast to conventional theory lectures, they are more efficient in promoting learning, are more flexible both for teacher and pupil, and moreover, they help the learner to acquire the self-learning habit, which should become a daily practice over the course of the learner's professional life.⁷ In relation to computer aid and web-based learning, there is extensive literature that shows how the computer is effective in the instruction of health professionals in comparison with conventional education, especially programs which include problem-solving or interactive methods. In medical self-education it facilitates the learner's attention, allows individualized progress and provides immediate non-competitive and flexible feedback, adapted to individual needs.⁷⁻¹⁰

This pilot study showed promising results. Although because of our small sample size, the result for the outcomes practicum users was not significant, our findings suggest that a preparation stage using web-based Research Methodology Guide and ORP outline has been efficient in enhancing participants' performance during SSSiT.

In addition, the designed projects before the SSSiT helped the faculties to guidance in how to best work with participants to develop their research skills during SSSiT.

One of the biases of this type of trial is influence between the groups: that is, students sharing or exchanging material. This bias has been minimal since the participants were from different countries and most of them didn't know others before the summer school. Another limitation is that we were not able to evaluate the long-term effects of our method on participants' performance in the research fields.

In addition, the small sample size must be considered as an important limitation when interpreting the results of this study.

This method should be tested in larger and more heterogeneous populations of health professionals, thereby evaluating the performance in long-term learning, as well as attitudes to research.

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Address for correspondence:

Name:
Maryam Yavari

Full postal address:
2400 Pratt Street
North Pavilion, Terrace Level, Rm 0306(ECG Core Lab)
Durham, NC 27705, USA

E-mail address:
yavari@med.mui.ac.ir