

Little is known about the background of the highschool leavers. Little research is done into the factors that made LESPEC successful.

In the first PESP course data were collected on the background of students, their performance at high school and the change that took place as a result of different selection procedures. Data were also collected on some of their study skills and the change of these skills during the programme. These data and the role they can play in improving the PESP programme will be discussed in the symposium.

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Biology In-service Training in Swaziland: an Evaluation of the Approach of IMSTIP

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Introduction

In Swaziland, a small kingdom in Southern Africa, an in-service programme for science and mathematics teachers is running, which has its roots back in 1978. It is an interuniversity cooperation programme between the University of Swaziland and the Vrije Universiteit Amsterdam. Aim of this programme is to improve the science and mathematics teaching at High Schools in Swaziland. By organizing workshops and designing teaching guides amongst other activities, one tries to teach the teachers to use a more practical and pupil centred way of teaching.

In 1992 the project IMSTIP (In-service Mathematics and Science Teaching Improvement Programme) ended and was continued under the name SMART (Science and Mathematics Advice and Regional Training project). In order to establish the baseline for this new project an evaluation was held of the approach of the previous project. Because this approach was still used in 1993 and 1994, the evaluation was focused on these two years. The evaluation was held within the biology department. The aim of the research was:

To describe the starting point of SMART based on evaluation of the in-service approach of IMSTIP of the last two years as regards the effectiveness and quality of the in-service approach for biology.

Design of the study

In order to describe the starting point a model of Goodlad et al. (1979), amplified by van den Akker (1993) was used as a framework. This model makes a distinction between six curriculum representations. This way not only attention is paid to the ideas of the designers and the way the curriculum is experienced by the participants of the workshops, but also for instance to the way the workshop is put into practice. This way one gets an overview of the whole process.

Next to that a framework from Klein (1991) was used. She splits the curriculum into 9 curriculum decisions that have to be made. These decisions range from decisions about the goals of the workshop to decisions about the way the students are grouped during the workshop.

Both the workshops and the teaching guide are seen as a curriculum in this research, although the focus of the evaluation was different. For the workshops the focus was on the SMART project: How effective is the in-service approach of the biology workshops, particularly in regard to the way participants of those workshops implement the teaching methodology as promoted by the project? For the teaching guide the focus was more on the school practice: How effective is the teaching guide "Organisms and their Environment" in supporting the implementation of the teaching methodology as promoted by the project? A third item of this evaluation was the environment, its attitude towards in-service training and its role in this approach. The results of the research on the environment were used as background information.

For answering the questions a variety of methods was used in order to gather more reliable information, in other words triangulation. Questionnaires were sent to biology teachers, headteachers, and pupils, interviews were held with biology teachers, the senior inspector of science, and staff members of SMART, and lessons given with help of the teaching guide were observed. Also staying with the project during the evaluation gave a better insight in the project. Next to this document analyses of both the teaching guide and the written materials of the workshop were performed.

Findings and conclusion

As a result of this research an as broad as possible picture of the baseline of SMART would be offered. Moreover, some major conclusions can be made.

First of all, the three elements of this research (the workshops, the teaching guide, and the environment) do not form a coherent entirety. Although most of the persons involved in this evaluation stated that they support the attendance of workshops and the purchase of teaching guides, this support most of time only manifests itself in informing the teachers about workshops and teaching guides. In schools, no supportive environment is created in

the sense that teachers are given extra time for preparation of lessons or study. No follow up of the training in whatever form is given by the project. The workshops itself more focus on the evaluation of the content of the teaching guide, than on training teachers in using that guide. Apart from a bit of theory none of the components mentioned by Joyce & Showers (1988) as being effective were present in the in-service training approach.

This leads to the second major conclusion. The workshops, as well as the teaching guide, are more or less providing the teachers with tools for making their lessons more practical. However, hardly any attention is paid to the way teachers should use these tools. During the workshops teachers more or less play the role of their pupils when practising learning activities for making the lessons more practical. The teaching guide also just describes the activities and does not pay any attention to the way to organize the lessons and to the benefits of this change in teaching style.

Then there is the problem of the gap between the daily practice of the teachers and the characteristics of the innovation. From observations it became obvious that teachers were not used to a more practical and pupil centred way of teaching. They normally use the expository way of teaching, so it is clear that a more practical and pupil centred way is far away from the normal practice of the teacher. The gap is too large in order to be bridged by a one-day workshop three times a year. The workshops too much have a one-shot character and can therefore not be expected to be effective (see also Fullan, 1979; Joyce & Showers, 1988). This conclusion is supported by the goals of the workshops which all focus on the content of the teaching guide to be developed.

The teaching guide itself had not been validated, nor designed in a systematic way. It is only evaluated by the teachers, not evaluated when used by the teachers. The observations showed that teachers had a lot of difficulty with performing practicals. Especially the organization of practicals was difficult. Although a lot of teachers stated they use one or more activities they are exposed to during the workshops, one wonders how these activities are used.

Yet, the workshops are highly valued by the teachers and have an important role in giving the teachers the opportunity to meet one another and discuss problems with each other. Teachers also see this as one of the most important purposes for visiting a workshop. They also indicate that a workshop is the most appreciated form of in-service training. When changing the approach one has to take this into account. Next to meeting one another teachers come to a workshop because they have difficulties with the topic dealt with. So also the topic plays an important role.

Recommendations

At the end of this research based on the results some recommendations were made. First of all workshops should deal with the role of the teacher instead of the evaluation of the activities. Teachers should be able to practice their role as a teacher, or at least observe others in that role. The teaching guides should also be more focused on the role of the teacher during the practicals.

The guides should be designed according to a systematic way in which the guide is validated by experts, evaluated by observing teachers and rewritten based on the results of these evaluations. The workshops could also play a role in discussing the experiences of the teachers with the teaching guide.

Next to that the environment should be made more motivating. One thing which should be fairly easy to change is the way the expenditure of the science fees is organized in a school. Science teachers themselves should be dealing with this, so they would know how much is spent and how much still can be spent. This is not the case in most schools at this moment.

One last but major recommendation was that the project should pay more attention to the daily practice of the teachers. One should observe these teachers in class in order to get an idea of this daily practice. This could at the same time act as a way of evaluating the results of the teaching guides or workshops.

It is a difficult task to set up an in-service training with profound goals. There is always the dilemma of how far-reaching a goal should be. How far should these goals be away from the daily practice? Could they not become too easy? Fullan (1991) states that from studies on change it becomes obvious that goals should be substantial, because such projects are more likely to be successful than small-scale, easily trivialized innovations.

Trying to change the way teachers teach asks for a long-term in-service training, in which one uses a developmental approach, building in more and more components of the change over time. This case study gives another example of a project where this was not really the case.

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