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Setting up in-house training: Some issues to consider

By Dag Roll-Hansen (dag.roll-hansen@ssb.no),
Division for international development cooperation in Statistics Norway

The quality of a National Statistical Institute (NSI) to a large degree depends on the performance of the employees. Hence, making sure the staff has adequate skills is crucial. Training can improve the performance and productivity of the staff and ensure that they have the relevant skills.

The skills needed in a NSI are a mixture of practical and theoretical knowledge. This is rarely found at universities. Hence, educating staff by in-house training is often cost-effective. This paper will point to some issues to consider when planning in-house training. The paper will end by suggesting some main training programs[1].

1. The challenge

Expenditure on staff accounts for a dominant fraction of the budget in a statistical agency. In a sample of offices representing a broad array of sizes and stages of development, salaries accounted for approximately 70 per cent or more of the total budget[2]. Therefore, training employees to meet their maximum potential is important.

> *Training must do two things. First it must move your attitude. Second the skills you gain can only be seen in your work. If work has not changed, then training has done nothing. And remember, the knowledge you gain is not yours. You have to pass it on to others.*
>
> Mr. Isaiah Chol Aruai, Chairman of SSCCSE, Southern Sudan

Having the necessary competence is crucial to any NSI. It can be built trough various kinds of training. The need for training must be identified based on existing competence within the NSI. To work in a statistical institute you need a combination of practical and theoretical skills that you most often can not learn through formal education. Training staff to have the

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[1] The paper mainly reflects experiences from international development cooperation. Hence, it does not necessarily reflect the situation in Statistics Norway.

[2] Handbook of Statistical Organisation, Third Edition: The Operation and Organisation of a Statistical Agency;
http://unstats.un.org/unsd/publication/SeriesF/SeriesF_88E.pdf

right skills hence often is a challenge. This is why NSIs often turn to in-house training to give their staff the training needed. Effective training may be particularly important when hiring new employees or when the tasks or the technology at hand are changing.

In-house training is often a cost effective way of organising training. There are several reasons for this:

- training can be scheduled at your convenience

- training is more focused, consistent and relevant to your needs

- travelling and accommodation costs are reduced

Training courses may be designed and carried out by the NSI's own employees, national experts or foreign experts. Internet-based training courses should also be considered.

The need for training must be identified based on existing competence in the NSI. An important aspect in building the right competence is to find out what the different employees are good at and like doing that is important for the NSI. Then they should do more of this and learn to do it even better.

The difference between what competences you have and what you need is what you ought to focus on achieving. To find out what is needed, gap-analysis and competence mapping by surveys may be conducted. Standardising the production process also will make it easier to identify what competence is needed.

The course organisation consists of several elements. Trainers must be identified, as well as training facilities and last but not least: the course participants. It is important to find a way to motivate the trainers, find out when in the work-cycle to do the training and how to make sure that new skills can be used immediately.

The management must be an integrated part of the process. Without management ownership of the training process, it is not likely to succeed. The management also has an understanding of both the existing competence in the organisation and of what the needs of tomorrow will be.

A training centre is a crosscutting task, and may be best administered under the Department of Administration. The directors of the different departments may give input on what courses they need. The management should prioritise the suggestions for building competence according to plans and budget limitations.

The gain of successful training can be found on two levels, both on the personal and the organisational. For the individual more competence may give increased responsibility, more interesting work, higher salary and a future career. The organisation will be less vulnerable, have increased efficiency and higher productivity. When the staff has the right skills, it will be easier to get the job done. We will suggest four training programs to cover important areas in NSIs: Training new employees, training of statisticians (intermediate level), training and certification of senior statisticians and training of users.

2. Identifying training needs

An analysis of training needs will identify any gap between the skills the organisation needs and the skills the employees already have. It involves gathering information to identify areas where the employees could improve their performance. Further it is important to define the kind of knowledge to look for when taking on new employees. To collect this information employee surveys, management observations, user comments, meetings, inspections and tests can be used.

An analysis of training needs can help clarify the objectives in training the staff. This is invaluable for ensuring that money is spent on training that will help the NSI to achieve its objectives.

The IT systems used in the organisation will influence the training needed. The choice of systems to be used ought to be based on an analysis of what tools are accessible and which will serve the organisation the best.

To carry out an analysis of training needs, we need to[3]:

1. analyse our organisation's goals and the skills and tools required to meet these goals
2. determine what information or training employees will need to be effective in their job
3. evaluate who should be trained and how best to motivate them for training
4. establish how employees will best accept and integrate training and how they learn the best
5. evaluate the training in place and decide what your NSI can and can not provide in the way of in-house training, funding and time
6. assess which trainers or consultants can fill in these gaps
7. take a decision on which training best fits the needs of the organisation

It is important to assess lack of skills at all levels of the organisation, including all levels of management. This will send a signal to the organisation that everyone may need to improve; and that admitting that you need to develop your competence is not a problem.

The choice of training will also depend on what the employees need to learn and the number of employees that to be trained. For example, seminars are a useful way of giving a lot of information to a large audience, while smaller workshops allow people e.g. to practise problem solving.

The training needs identified ought to be made public in a course catalogue. The main purpose of it is to enable both leaders and staff to plan and prioritise their training needs. Making a list and a schedule requires an administrative effort the first time it is done, but the next time it will be easier.

The course catalogue may be made short and it may be long. Making an extensive catalogue, including a wide range of courses may be a bottle-neck. Striving to make the catalogue complete may take attention away from starting courses. Seen in this light, a possibility is to see an extensive catalogue as a menu to choose from, rather than an actual overview of courses to be conducted in the near future.

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[3] Based on www.businesslink.gov.uk

Now we will look into three tools to identify training needs: Standardising the production process, gap analysis and mapping competence with a survey. These tool may be used separately or in combination.

2.1 Standardising the statistical production process
Many NSIs are now working to standardise their production procedures. The main goal of doing this, is to implement standardised systems and working procedures throughout the organisation. If everyone uses the same tools and techniques it will be easier to maintain the technical systems, train staff and it will help reduce the cost of software. Statistics New Zealand has done influential work in this context, but the approach is also used by several other NSIs, among them Statistics Netherlands, Statistics Sweden and Statistics Norway.

The below diagram is pointing to the main areas of a statistical production process and areas it can be subdivided in. This figure may be a useful starting point when evaluating what competence is needed in a NSI[4].
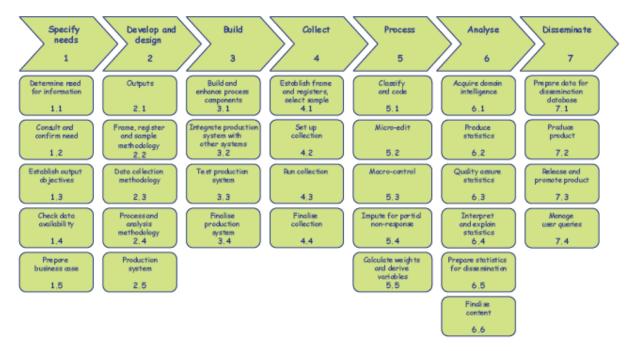

Figure 1: Statistics Norway's Business Process Model

In addition to the tasks identified in figure 1, three issues concerning all parts of the production process will have to be addressed:

1. Development of the architecture within methodology and IT
2. Quality Management
3. Project Management

Important areas in the statistical production process at your NSI ought to feed into the analysis of training needs described earlier. These are the areas were you must secure sufficient competence.

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[4] http://www.ssb.no/english/subjects/00/90/doc_200817_en/doc_200817_en.pdf

2.2 Gap-analysis

Plans are made for which activities an organisation is to engage in. Which financial resources are available is decided in the budget process. A plan should also be made for having people with the right skills at the right time.

Here we present a way to identify competence needs, trough identifying the gap between what the employees know and what they ought to know in different fields. The fields must be identified based on the statistical production process in the NSI and the major tasks to be done, taken from the Master plan or another document outlining the major achievements to be made. The major tasks must be divided into smaller tasks that can be assigned to a single person or a team.

Tasks	What kind of knowledge do we need?	What do we have?	How can we get what we lack?	Who?	When?
1 ….. 2 ….. 3 …..	1 ….. 2 ….. 3 …..	1 ….. 2 ….. 3 …..	1 ….. 2 ….. 3 …..	1 ….. 2 ….. 3 …..	1 ….. 2 ….. 3 …..

The main idea of a gap-analysis is to fill inn information on what competence we have, what we need and how we can get what we lack in different areas. It is also open for names and time frames. A sustainable approach on administering this form may be to have them filled in by the executing line organisation. Keep in mind that this comes in addition to ordinary planning of activities and budgeting.

A major task may e.g. be to conduct a survey. The tasks that are to be considered when planning for human resources must however be more specific. They must include making a questionnaire, design a sample and plan for field work. And so on.

Identify the main activities of the part of the NSI you manage
The major tasks to be done are usually given in the Master plan, or on a lower level – is derived form the plan. We should identify the tasks to be done within a period. It may e.g. be to prepare new computers for use, set them up in a network, and keep them operational and virus-free. The reference period should be either the financial year or a major event that will take place, e.g. a survey or a project.

What knowledge do we need?
The first point is to identify what kind of knowledge and skills does a group need to solve its tasks. It may be need for e.g. subject matter, IT, administrative, social and language skills. In addition, also include the need for back-up-systems, descriptions of routines and tasks, organisation of work, project groups etc.

What do we have?
Here existing competence today should be identified, including all kinds of relevant skills. The difference between what we need and what we have shows us the competence we lack, our competence gap. If we e.g. need to set up new computers but have no one that can do it, this is our competence gap. This is the basic idea behind a gap analysis.

How can we get what we need?
Here the idea is to find ways to fill the gap. In addition to give courses it may be relevant to organise work in a way that leads to sharing of knowledge (e.g. job rotation), organising internal or external courses or workshops, recruiting new employees with the needed skills and establishing and documenting standardised work procedures. Other possibilities that can be considered are to change to a tool or work mode that is known in the organisation or buying a service form outside.

Who?
Then it is time to start thinking of whom to fill the gap and make a plan to fill it. If training is the appropriate way to fill the gap, we must find out were the needed training is available, when it ought to be done and make a proposition for whom to take part in training.

When?
As fare as possible training should be given close to the time the new skills are to be used. The management must prioritise the suggestions for training according to plans, priorities and budget constraints.

2.3 Mapping competence with a survey
A survey mapping the existing competence in the institution may be implemented as part of a baseline study. This ought to be aimed at identifying existing competence, need for competence development and maybe also potential teachers. A questionnaire developed at the Southern Sudan Centre for Census, Surveys and Evaluation (SSCCSE) is mapping competence at the level of the individual employee is given as an appendix to this papaer. It identifies the formal education of the employees, as well as asking them to evaluate their own skills and needs for further training. Evaluation of organisational competence may also be based on the PARIS21 Statistical Capacity Building Indicators[5].

A mapping of existing competence and skills and need for additional training is important for three reasons: First it will make it possible to establish a baseline of existing competence. What is the knowledge base at the NSI today? Secondly it will be useful for identifying and prioritising courses to be given. In what areas do we lack competence and which should be prioritised? Thirdly it may be used to identify potential trainers.

But be aware: Initiating a competence mapping creates expectations. Do not have your staff participate in such an exercise if you do not have the resources to or for other reasons do not intend to train them. Broken expectations may in many cases be worse than having no expectations at all.

The areas prioritised by the management, the needs identified by the gap analysis and the results of the competence survey should all be part of the decision process when planning in-

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[5]Statistical Capacity Building Indicators, PARIS21 Task Team, http://paris21.org/documents/1084.pdf

house training. This both applies for making the list of courses to be conducted and planning for when they should be given.

Now we have looked into different tools to identify training needs. Now it is time to look at how to organise the training.

3. Organising training

Organisation of training is related to the trainers, the trainees and the training itself. It e.g. discusses the length of training, resources for in-house training and strategic choices regarding the organisational setup.

3.1 The trainers

It is important to draw on existing skills in the NSI when developing a training programme. If we have competent people to teach Microsoft programs or statistical packages in one part of the organisation, their competence ought to be spread to other parts of the NSI. We should also consider if different kinds of related knowledge can be combined in one course. It might e.g. be useful to combine aspects of analysis of data and dissemination of results in a course on report writing.

For in-house training to be effective, the best is to have the appropriate expertise within the organisation. When possible, internal trainers ought to be used: It will strengthen the learning potential of the organisation and build confidence among the trainers. If no one has the expertise, it must be brought in from outside the organisation. This can be done by having an external consultant first conduct the course with the help from an internal assistant teacher. If help it is brought form outside it is important to have a plan to build competence in your own organisation, to have someone to teach the course when it is to be repeated. Hence, it is important to have one of the employees cooperate with the external teacher in preparing the course and to be acting as an assistant teacher. When the course is repeated, the assistant teacher will take responsibility for the course. When the assistant becomes the main teacher, he or she takes on a new assistant.

When choosing which employees will teach the course, make sure that they both have the ability to teach effectively and are interested in doing so. An advantage using an existing employee to become a trainer is that ha or she already has experience in the field and knowledge of the work of your statistical agency.

An in-house trainer may need guidance in[6]:

1. presentation and speaking skills

2. creating interest

3. dealing with difficult students

4. teaching techniques

5. course and session design/planning skills

6. evaluation, monitoring and feedback skills

7. measuring the effectiveness of training

8. setting up support for employees after training

9. conducting training needs analyses

The in-house trainer ought to be a specialist in his or her area. It may be a good idea for management to sit down with the trainer and identify what content should be included in the course. One should be motivated to act as a teacher, in order to encourage the employees to acquire skills and pass them on to their colleagues.

3.2 The training and the trainees
The need for training will vary between the employees, but some needs are more general than others. Training in basic analysis in statistical packages like SPSS, SAS and Stata, and computer programs like the Microsoft Office-programs are examples courses that are often useful for a producer of statistics. Even though many employees have a thorough theoretical education, it is often a challenge to apply the theoretical knowledge in their day-to-day work.

It is also necessary to make the employees use the newly acquired skills at once they return form the course. Otherwise the knowledge will be forgotten and the training will be wasted. Conducting the courses in-house will facilitate the timing of the courses in relation to tasks to be solved.

3.3 The length of the training: Short, medium and long term
It is important to educate the staff to the right level. This implies capacity building of short, medium and long term.

Short term courses are often aimed at supplying additional competence in a limited field. Giving the staff insight in practical approaches to solve tasks is often best done by having them attend relatively short courses related to their tasks. The knowledge needed is often based on sharing experience on practical production of statistics and working routines.

Courses or workshops focusing on training of trainers, were people form the local statistical offices go to the NSI headquarter to learn later to teach their colleagues, have often proven to be effective. How many employees that need to be trained, the complexity of the issue and the

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[6] Based on www.businesslink.gov.uk

prior education of the employees ought to be taken into account when considering to decentralise training this way.

Study trips often give inspiration and ideas and may make it easier to discover own weaknesses.

To develop and produce statistics, specialists are needed. Competence building of medium and long term must be initiated to build specialists. This is appropriate when the needed competence is viewed as particularly important, or may be seen as an investment in particularly valued colleagues.

The costs of scholarships, fees, travel and accommodation is a challenge for most NSIs, particularly related to long term training. An additional challenge is that long term training takes an employee out of production for a substantial amount of time. A plan must be made to fill the gap of the employee in training.

After the education is completed the employee will often be more attractive for other organisations to employ. Long term training often is given in exchange for a commitment to work in the organisation for a given period of time.

The length of a training period should be based on an assessment of all the above mentioned aspects.

3.4 Distance learning

Organisations that do not have the necessary skills in-house may find that distance learning courses are more suitable to fit their needs. There are different types of distance learning methods including correspondence courses and e-learning courses.

Distance learning courses:

1. allow employees to complete training while remaining in employment

2. can be completed at a time to suit the organisation and the employees

3. are cheaper than externally provided courses

4. are available for a wide range of topics

5. offer recognised qualifications from entry level diplomas and certificates to post-graduate degrees

A major advantage using e-learning is that it allows people to enhance their qualifications without taking time off or even leaving the workplace. Employees can study part-time using courses delivered online and achieve recognised university qualifications

Note that providers of new machines and systems often offer free or cheap training on how to use them.

3.5 Training the "untrainables"

No one is untrainable. It will always be possible to make a person function better in his or her job trough training or other human resource development measures.

Some will always be better qualified, smarter more motivated or more creative than others. In most cases it will be easier to train these, in the sense that they will be more receptive to new knowledge. Never the less, most skills and employee characteristics can be modified and improved by training. Some employee characteristics are however difficult to change. Most personality traits are generally difficult to change. This also goes for intelligence and attitudes. The best way of ensuring these qualities is through recruitment. They may be difficult to develop at a later stage. The most important of these characteristics is probably the inner motivation of a person to do a good job. The other skills and characteristics we need for an NSI can be build or improved by training, on the job training or having autonomy and responsibility.

Our aim with training should be to bring everyone to a higher level than they were before the training started. It is always important to adjust the training to the prerequisites of your employees, and not only educate the employees that already have the most education and that we assume are the ones easiest to train. No one is untrainable.

3.6 On the job training

Training on the job generally is the most efficient and cost-effective type of training. Efforts ought to be made to increase knowledge sharing between senior and junior staff, and a better foundation shall be created for knowledge sharing between various areas within the organisation. Learning for most employees comes from this kind of training.

> *In our department everyone have to rotate. Everyone should know what everyone is doing. There is a lot of cooperation in the economic department. What happens in one section, everyone knows. People know more or less what everyone is doing.*
>
> James Lemi, Acting Deputy Director of Department of Economic Statistics

More formalised on the job training often include:

Job shadowing involves one person showing another all the aspects of a particular job and can cover a lot of topics. It is suitable e.g. for training new employees as part of the introduction process.

Coaching involves regular reviews of an employee's progress. It is typically carried out by line leaders who advise employees on how to improve their performance. It provides employees with feedback and can be used to introduce new tasks or responsibilities.

Mentoring is typically used for employees at senior management and chief executive level and is a personal way to coach and advise senior staff. The role is best carried out by someone other than a line manager, possibly someone from outside of the organisation, who has the skills and experience to guide the employee and suggest practical solutions.

Passing on training involves one employee participating in external training and returning to pass on their knowledge to other employees. It helps to keep costs down but is more suitable for more general skills such as IT.

Knowledge banks, e.g. a reference book or CD-Rom library, intranet and handbooks are an effective way of providing basic information that employees can access at their convenience. They are a way of holding information on office procedures and how to do basic tasks.

3.7 Resources for in-house training

For in-house training to be effective, it is necessary to ensure that the appropriate expertise and resources exists in-house or can be recruited from outside. We will have to dedicate the necessary resources to the training programme. These include management time, an experienced trainer, the administrational effort, training or course materials, computers, a room to do the training and maybe also travelling, accommodation and refreshments. Training will also require employees to be away from their posts while they learn.

Doing training may also rewarded with extra pay. This may motivate the employees to acquire skills and pass them on to their colleagues.

3.8 Evaluating training

Evaluating the effectiveness of training gives us an opportunity to improve future training. Below we will look at some ways to find out if training has worked.

Ask employees whether the training was relevant and appropriate. Relevant questions may be if the training was relevant to their job and their level of expertise, how they will put their learning into action. They can also be asked to give feedback on the training method, like what worked and what could be improved. Training assessment or evaluation forms may prove useful here.

Tests can be given to course participants to evaluate what they have learned from the course. Consider testing the participants before and after the training to get a picture of the improvement of skills from taking the course. An alternative approach is to evaluate a product that is made during the course, e.g. an analysis or a report.

Monitor improvements in the performance of the statistical production process, or other organisational targets to be improved by the training. Try to measure indicators like the number of finalised publications, hits on the internet, number of errors, production costs, user complaints, absenteeism, staff turnover and quality improvements. Assess whether or not improvements can be contributed to the training.

Performance appraisals and development talks between the employee and his immediate supervisor can be used to review the impact of the training on the employee's performance. To be able make an employee perform good, the employer have to know his abilities, what knowledge he needs and what motivates him to do a good job. The employee needs to now what is expected of him and to be assisted in achieving the goals that are set.

It is often difficult to have high validity in training evaluations. To make a good evaluation we ought to collect comparable data both prior to the training and after the training. We also have to be able to make an argument that changes are related to the training given.

In evaluation terms the observations of the pre- and post-training data would be given by an O. The intervention – in this case the training – is denoted by an X. If we measure before training, do the training and then measure again after training, the evaluation design could be described as:

O   X   O

This design will give us a reasonably good impression of whether or not the training has had any effect. The basic idea is to measure if the observations before and after the training has occurred, are significantly different. Adding and measuring more observations or interventions will make the validity of our evaluation design stronger.

3.9 Organisational setup and tasks
The in-house training can be organised in several ways. We will mention three alternative approaches to the organisational setup:

1. Constitute a special unit within the NSI.
2. Give the responsibility to a couple of persons within a supporting section, for example in a Human Resource unit, who is working part time with training and part time with other tasks.
3. Constitute a cross-division committee, with one person, placed in a supporting section like documentation and dissemination, responsible for leading and maintaining the committee. The committee should include persons with responsibility for employees.

There are advantages and disadvantages with all alternatives. The first will assure manpower dedicated to the task, but may have a challenge in becoming sufficiently integrated with the rest of the NSI. For the second it may initially be easier to find the resources, but the staff may not be able to prioritise the in-house training over other tasks. The third may secure that all parts of the NSI are represented, but may lead to dilution of responsibility.

The responsibilities and task of the in-house training organisation would be:
1. Identify training needs. This should be done both for the needs of the NSI and the individual employees.
2. Prioritise the training needs and develop a training plan.
3. Inform all the employees of training possibilities well ahead of time.
4. Develop routines for selecting participants for obligatory training.
5. Develop routines for applying to voluntary training, as well as routines for selecting among the applicants.
6. Identify the right person or institution to conduct the training.
7. Organise the training.
8. Evaluate the training.

In-house training is a powerful way to systemise Human Resource Development (HRD) issues, and to provide a good and stable way of ensuring the continued competence of the NSI staff.

It may be useful to concentrate courses to a time that is normally relatively quiet. If such a time period, at e.g. two months can be identified, it will make it easier for the staff to set aside time for training, without conflicting with other tasks of the NSI. It is also important for the management to allow employees to spend time for training.

Giving the staff insight in practical approaches to solve tasks is often best done by having them attend relatively short courses related to their tasks. The knowledge needed is often based on sharing experience on practical production of statistics and working routines. Such training could be given by a training centre. The centre could do training both in the headquarters and in regional offices if such exists. Hence, portable equipment may be an advantage. At first, the main priority of the centre should be to give internal training. Gradually it may take on other tasks like supplying training for other institutions and library services.

3.10 Course frequency

Competence is not static. Using it keeps it vital and develops it. Often refreshing it is necessary to be updated on new developments in a field, to be reminded of what you already know or as a way of motivating or rewarding employees.

The golden rule for how often a course ought to be given is this: The course must be repeated before the number of people competent in the area is becoming critically low. This is of course often difficult to predict, in particular for NSIs with a high staff turnover. Other events are easier to plan for, like what surveys are to be done in the near future. When deciding on frequency it should also be considered that new employees should have the possibility to start working effectively as soon as possible.

3.11 Suggestions for courses

The most important issue when planning an in-house training centre is making the list of courses. It should be made available well in advance and distributed widely. This enables both managers and potential participants to plan and prioritise their training needs. Making such a schedule requires an administrative effort the first time it is done, but following years the work load will be reduced considerably.

The kind of training that ought to be prioritised will wary between different NSIs, and the topics that needs to be addressed ought to be identified before setting up a training plan. As the tasks to be preformed by a NSI are more or less the same across the world, we have identified some topics that usually will be relevant. These are specified in the reminder of the document.

The suggested curriculum is based on the in-house training conducted in Statistics Norway, the United Nations Statistical Institute for Asia and the Pacific[7] (UNSIAP), the SADC[8] Training Package, experiences from SSCCSE[9] in Southern Sudan, NSO in Malawi[10] and other experiences with training as part of development cooperation in Statistics Norway[11]. Statistics Norway can be of assistance in providing material for the suggested training programs.

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[7] www.unsiap.or.jp

[8] http://www.reading.ac.uk/SSC/media/sadc-training-pack/

[9] www.ssccse.org

[10] www.nso.malawi.net

[11] www.ssb.no/en/int/

A good place to start: The SADC package
The Southern Africa Development Community (SADC) package[12] on statistical training contain training material on most courses suggested in the following. It gives different entry points for students on different levels; basic, intermediate and high. The package can be used both for self-training and training courses using teaching material from the package.

To make the employees able to focus on course content rather than use of the package, they ought to be introduced to the following features of the package:

1. Background of the SADC package
2. Structure of the SADC package
3. Material for trainers
4. Navigation in the package
5. Video lectures and demonstrations
6. How to copy documents/ change view format

Basic knowledge of MS-Word, Excel and PowerPoint is also necessary to use the SADC-package.

Here we have discussed organisation of training. This has been related to the trainers, the trainees and different aspects of the training itself.

4. Training programs

In this paragraph we will suggest four training programs that embrace the core training needed in National Statistical Institutes. Each of them ought to be given as an integrated set of courses at regular intervals.

The elements these programs consist of will be elaborated below. The first program is for receiving new employees. The aim is to give them the knowledge they need to bring them up to speed as fast as possible. The second is to develop and specialise staff further. The courses needed depend on the competence level of staff and their field of work. The third program aims to develop and certify senior statisticians, professionals at an advanced level. The aim is to develop competent colleagues to become leading professionals within their fields of official statistics. The fourth training program is aimed towards the users. It has two goals: First, it aims to train users in identifying what data is useful for evidence based planning. This will guide the NSI in what statistics to collect. Second, it aims at training users in how to utilize statistics, regarding both limitations and possibilities for evidence based planning.

4.1 Program for new employees: Basic level

Objective
It is important to receive new employees in a way that makes them understand the organisation, the statistical process, their tasks and that integrates them socially as fast as possible. The suggested program for new employees should be a course informing newly requited staff how the different parts of organisation works and learn them some basic

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[12] http://www.reading.ac.uk/ssc/media/sadc-training-pack/index.htm The material is developed by the University of Reading, UK, for the Southern Africa Development Community Secretariat with support from European Union.

concepts and key tasks in making statistics. This also helps people to get to know each other and facilitates a rapid integration of new employees in the organisation.

All employees of a National Statistical Institute also ought to know the principles of the statistical system; the role of the NSI and its relation to other producers and users of statistics. To safeguard the reputation of a NSI and to build a cooperate identity; all employees should know the concept of confidentiality and basics of statistical laws and regulations.

Core topics
Organisational issues
- Presentation of the NSI – an overview of the organisation and the National Statistical System
- Confidentiality and data security: The concepts, rules and routines
- The business model: Presentation of the statistical production process
- Systematic quality improvements, total quality management
- The NSI team spirit

Statistics, methods, data collection and dissemination
- Introduction to social and economic statistics
- Introduction to statistical methodology
- Introduction to survey
- Collecting data from administrative sources
- Strengths and weaknesses in data from different sources
- Introduction to dissemination

Basic skills
- Introduction to administrative routines
- Introduction to IT-tools
- Introduction to tabulation, analysis and report writing

The relation to others
- User orientation, user requests and user needs
- International cooperation
- The relation to respondents and other suppliers of data

Courses aimed more specifically aimed at improving skills that are not relevant for all new employees, ought to be given as part of the ordinary in-house training program.

4.2 Training of statisticians: Intermediate level

The staff in a NSI needs a mixture of theoretical and practical skills. The needed skills may be quite specialised and vary depending on the statistics in question. Hence, the courses needed depend both on the competence level of staff and their area of work. The main training elements for intermediate level training of statisticians are oriented towards:

The statistical production process
- Planning and design of surveys
- Questionnaire design and testing
- Data collection
- Cartography, GPS and GIS I-II
- Basic statistical theory and Sampling methods
- Data processing
- Statistical analysis
- Report writing and dissemination

Training in economic statistics
- Gross domestic product and National accounts
- Economic indices
- Business register
- Foreign trade statistics

Training in demography and social statistics
- Demography statistics: Concepts and methods
- Social statistics: Concepts and methods

General topics
- Language courses
- Project management
- IT literacy: File management, Windows and Microsoft Office
- Use of statistical packages, interpretation and analysis
- IT-support, development and infrastructure
- Administrative support
- Search and find on the Internet
- Use of Internet – virus protection and control of junk mail at individual computers
- Quality and management

With some additional working experience, training at this level should enable the participants to work relatively independently.

4.3 Training and certification of senior statisticians: High level

Objective: Developing professionalism
It is important for an NSI to encourage competent colleagues to develop. It is important to encourage staff to become leading professionals within their fields of official statistics. Hence, it is important to reward development of professionalism, the same way becoming a leader is rewarded.

The over all aim of training Senior statisticians is to improve the quality of statistics produced by building on colleagues with a thorough knowledge of:

1. The statistical system; the legal ground, statistical methodology, standards, data security and user needs.
2. The statistical production process; data gathering, data processing, analysis and dissemination.

In addition to focus on strengthening these competencies within the NSI, developing Senior statistician training builds a career path for professionals in the field. Training can either be given in-house, or in cooperation with a university, either near by or trough distance learning courses. To develop highly skilled professionals, both are probably needed. Professional experience is also an important part of being a Senior statistician. To be considered for being upgraded to a Senior statistician, an employee should have at least five years of experience form the NSI.

Relevant training must be supplied by the NSI, either trough in-house training or training organised by training centres or universities. Distance training may be an advantage in order to keep the employee in work while he or she is educated.

Colleagues who consider themselves to have the sufficient skills should have the possibility to apply for becoming a Senior statistician.

The certification system
A system for certification of Senior statisticians can be established in the following way: Colleagues may apply for being upgraded to Senior statisticians. The applicants will supply the following information:

- An application pointing out why the applicant should be upgraded.
- A resume (curriculum vitae), describing present and past tasks.
- Reports, articles and other work the applicant have produced either alone or in cooperation with others. If more people have been involved, the applicant ought to describe the division of labour.

The qualifications of the applicant should be evaluated by a committee, consisting of people with relevant qualifications. The committee may be appointed by the Director General. At least one of the committee members should come from outside the NSI. The committee should evaluate all applicants individually and give each of them a justification for its decision. The committee may gather additional information about the applicants if needed. In addition to the documents mentioned above, the immediate supervisor is asked by the committee to give a statement about the applicant.

The responsibility for certifying Senior statisticians also may rest with the Ministry in charge of the NSI. This may make it easier to upgrade the position and salary of the Senior statistician. The responsibility for certification also may rest entirely or be done in cooperation with a university. This emphasises the scientific aspect of the certification, also making it possible to include a certificate or a diploma as part of the system.

The required competencies...
In general formal education on lower grade university level ought to be required. Further a part of this has to be within relevant fields of statistical methodology (e.g. half a years study). In addition skills and experience in using different methods must be documented. This applies both for statistical methods and other methods relevant for developing statistics. Methods for production and analysis of official statistics ought to be emphasised. The following competences in using statistical methods ought to be considered as relevant.

...in methods for:
- Planning of surveys or other kinds of data gathering
- Questionnaire design
- Use of administrative registers
- Planning and development of statistical systems
- Evaluating data quality, uncertainty and errors related to sampling and problems associated with registers (if applicable)
- Evaluating different sources of errors
- Measuring uncertainty, e.g. trough standard errors and confidence intervals
- Statistical methods in statistical analysis
- Documentation, metadata, dissemination and confidentiality

...in official statistics. Skills and experience in:
- Planning and production of statistics
- Analysis and dissemination of statistics
- The fundamentals of official statistics, including the legal framework, standards, confidentiality and systematic quality improvements
- Project work
- In more than one area, including international cooperation

The applicant must have thorough knowledge of the relevant methods in their field. Further, interpersonal skills like contributing to team work and assisting colleagues should be rewarded. The same is the case for efficiency, accuracy and innovation in statistics.

Acknowledging the Senior statistician

Being certified as a Senior statistician should be seen as a title of honour. It is however crucial that the reward is not only a title, but that it also shows that the NSI values the colleague and his or her contribution through an increased salary and an upgraded position. Hence, the Senior statistician certification system must be liked to the system of grades and salary used in the NSI.

4.4 User seminars

Objective
We do not make statistics for ourselves. To be used, it must be perceived as useful. Measures should be taken to ensure that statistics are usable for making policy based on evidence.

The orientation towards users has two main elements: First, it relates to cooperation with users in identifying what information to collect and how to process it. The aim is to cooperate on collecting data that are relevant for policy making, in regard to the choice of topic, definitions used and when the statistics are made public. We want the topics we choose to be relevant for the diction makers in the sense that it enables them to formulate an evidence based policy. We want to use definitions that are applicable for targeted policy interventions and that are comparable over time and internationally. Finally we want the statistics to be made accessible to policy makers and the general public at a point in time when it can have the best impact. This e.g. means that policy makers should have as new data as possible in front of the annual planning process.

Second, it aims at training users in understanding and making the best use of statistics. This includes illuminating both the limitations and the possibilities in statistics used for evidence based planning. The overall focus of statistical dissemination should be user-friendliness, meaning that statistics should be easy to find, easy to use *and* easy to understand. This is not always easy to achieve. Hence, it is often a need to educate representatives from important user groups in how to find, interpret and use statistics. It may be useful to train government officials in finding policy relevant information and using it and to train journalists in finding and using statistics.

Identifying data to collect: Core topics

- What statistics is needed for evidence based policy?
- Definitions and questions
- Identifying change over time
- Making international comparisons possible

Making use of statistics: Core topics

- Where do I find the statistics?
- What does it mean?
- Comparing numbers
- Uncertainty
- Figures, tables and graphs

Summing up: It is useful to conduct two types of user seminars. First the users ought to be included in defining the questions we are trying to answer by statistics. Second, users should be given the opportunity to learn about the interpretation and use of statistics, including its limitations.

4.5 Ad hoc training
In addition to the programs specified above, additional training probably will be needed. Urgent needs may arise, that necessitates specific training in different fields. These needs may be caused by new technological developments or strategic choices by the management. An example of this can be need for training arising from introducing a new analytic tool or introducing new ways to present data on trough the Internet. Training needs may also be caused by upcoming problems, like when work is hindered by severe virus attacks.

When planning for training, one should set aside resources for training needs that we do not yet know.

5. Future challenges

This paper has addressed some issues related to in-house training; identifying training needs, organisation of training and suggesting four core training programs. It will end by mentioning three challenges that ought to receive more attention in the future.

Building commitment
The better we train staff, the more attractive they get to other organisations and the more possibilities they have for alternative employment. At the same time employees that feel that their organisation give them something – like training, interesting tasks or a higher salary – are likely to be loyal to their organisation. They not only feel obliged to work hard, but they also *want* to give something back to the organisation. This commitment is a potential not realised in most national statistical institutes.

Training material
A lot of training material is available. The Southern Africa Development Community (SADC) package[13] on statistical training contains a substantial amount of training material. The African Group on Statistical Training and Human Resources (*AGROST*) is also planned to be a source of training material. Statistics Norway can supply materiel on several of the topics described above. Still a lot of training material seems to be under-utilized. Training material ought to be shared as a common good, not loosing value when being used by others.

Motivation to teach
Sharing knowledge is in some cultures not considered to be a good strategy for success in an organisation. If you give away your knowledge, someone else may be wiser than you and may reach further than you. This is counterproductive from an organisational point of view. In order to make competent staff train their colleagues, they must see it as a good thing to do. Some important motivators for teaching are commitment and obligation to the organisation, status and financial incentives. These are tools we must use.

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[13] http://www.reading.ac.uk/ssc/media/sadc-training-pack/index.htm .

Appendix: Competence mapping form from SCCSE in Southern Sudan

SSCCSE Staff Human Resource Development
Assessment of available capacity and needs for additional training
SECTION A: ID and general personal characteristics

Item	
Surname(s) / Family name(s)	
First name	
Sex	☐ Male ☐ Female
Age group (in completed years)	☐ -19 ☐ 20-24 ☐ 25-29 ☐ 30-34 ☐ 35-39 ☐ 40-44 ☐ 45-49 ☐ 50+
Highest level of formal education completed (single response)	☐ Primary 8 ☐ Secondary 5 ☐ Master degree ☐ Junior 3 ☐ Secondary 6 ☐ PhD degree ☐ Junior 4 ☐ Post sec. diploma ☐ Other specify ☐ Secondary 3 ☐ University first degree ☐ Secondary 4 ☐ Post graduate diploma	If highest level of education is secondary 6 or above, please specify within which main subject matter area did you specialise (single response) ☐ Stat./demogrph ☐ Public adm ☐ Polit science ☐ Economics ☐ Comptr.science ☐ Math ☐ Business adm. ☐ Other specify: ....
Currently working **mainly** in which SSCCSE Division? (single response)	☐ Finance &Administration ☐ Monitoring & Evaluation ☐ Social statistics ☐ Economic statistics ☐ Census and Services ☐ GIS ☐ IT ☐ State Statistics office - Specify state: ....
Current **main** position/function within the SSCCSE division. (single response)	☐ Director, deputy director ☐ Subject matter officer, IT officer, other technical/statistical officer etc + ☐ Administrative staff, accountant, secretaries etc ☐ Interviewer/Fieldworker

Section B. Need for training on short and medium term
Describe your current **own skills** and your **own needs for further training given your current area of work** for each of the listed soft wares and subject matter theories etc on a scale from 1 to 6 (1=low knowledge/low need for training, 6=high competence/high need for training)

code	topic	Is this topic relevant for your current area of work? **If no, skip to next line** **If yes, check the rest of this line**	Current own skills (tick only one box) low skill -----> high skill	Own need for more training (tick only one box) low priority---->high priority	If high own need for training (priority 5-6) specify further on topics for training (in writing/key words)
Soft ware					
01	Word	No ☐ ↓ Yes ☐ →	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	
02	Power Point	No ☐ ↓ Yes ☐ →	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	
03	Excel	No ☐ ↓ Yes ☐ →	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	
04	Access	No ☐ ↓ Yes ☐ →	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	
05	CsPro	No ☐ ↓ Yes ☐ →	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	
06	SPSS	No ☐ ↓ Yes ☐ →	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	
07	ArcGIS.	No ☐ ↓ Yes ☐ →	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	
08	Software specify:	No ☐ ↓ Yes ☐ →	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	1☐ 2☐ 3☐ 4☐ 5☐ 6☐	

Section B. Continued

code	topic	Is this topic relevant for your current area of work? **If no, skip to next line** **If yes, check the rest of this line**	Current own skills — low skill -----> high skill	Own need for more training — low priority---->high priority	If high need for training (priority 5-6) specify further on topics for training (in writing/key words)
Subject matter					
09	Statistical theory	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
10	Sampling theory	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
11	Demography	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
12	Economic statistics	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
13	Social statistics	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
14	Accounting & Budgeting	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
15	Management & Planning	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
16	IT (technical)	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
17	Survey planning	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
18	Questionnaire & Manual design	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
19	Data entry	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
20	Data cleaning	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
21	Data base/data storage	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
22	Data tabulation	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
23	Report writing & dissemination	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
24	Web site dissemination	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
25	Advanced data analysis	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
26	Formal English Language	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
27	Formal Arabic language	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
28	Other specify:	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	
29	Other specify:	No ☐ ↓ Yes ☐ →	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐	

Section C. Resource persons for training courses   +

Provided that internal training courses will be arranged, please list codes (see section B) for topics that you find that you could contribute as a lecturer alone or together with a team with the purpose to train SSCCSE colleagues and possibly also invited external staff

topic	Code from B	Comments, ideas, for further discussion, training course design etc.