Are you a competent workload manager?

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A controller's ability to manage workload is a subjective and individual response to a given task load situation. It enables him/her to continue to provide a safe and efficient ATC service. Personal factors (e.g. skill, experience, stress) or external factors (e.g. time pressure, noise, stressors, distraction, organisational change issues etc.) can all influence workload. There seems to be a general consensus that ability to manage workload is one of the key ATC competencies. How does a controller develop this competence?

There are currently two conceptually different approaches to addressing workload management in ATC training.

Traditionally, workload management is introduced towards the end of a training course, allowing students to initially focus more on carrying out individual tasks and mastering some of the skills such as applying separation standards correctly, vectoring, speed control etc. Then as the traffic loading is made busier and more complex, the associated workload inevitably increases and the skill of workload management is introduced in training. This requires students to consolidate what they have learnt up to this point and to continue to apply the "individual task-based skills" along with some new tips and techniques from the instructors for use when the workload is high. Many discover important new aspects of the skills which they thought they had mastered by this point in training, such as building in safety buffers, or at times opting for less efficient solutions. Many others, however, find it very difficult to adjust to the new conditions and to understand why some of their skills are no longer working as they were before. A typical instructor assessment would in this case blame the student's lack of ability (simultaneous capacity) required for the job. Whilst such a remark might be true in a small proportion of cases, more often than not, we fail to understand the real reasons for the insufficient performance.

Competency-based training offers an alternative to the traditional way of teaching workload management. Within this concept, the workload management is addressed from the very beginning of the training as a core ATC competency. Regardless of the traffic level or the individual training objective, the ability to manage personal workload is treated as a part of the job. The emphasis throughout training under this system is on what the final performance should be, integrating the knowledge, skills and attitudes required to perform the task (the provision of an ATC service) to the prescribed standard.

Usually, a competency-based assessment is made on the basis of the different levels/standards of performance reached progressively during training, which allows students to build up their competence until the finally-required level of performance is achieved. But how do we know that a student has reached the desired performance level in terms of workload management? Typical performance criteria (in terms of observable behaviour) which are associated with workload management are listed below:

- manages personal efficiency and work tempo by proactively adapting solutions
- limits the number of simultaneous actions and ensures their timely completion
- prioritises and schedules tasks;
- manages interruptions and distractions effectively;
- builds in appropriate safety buffers into control actions;
- organises traffic flow according to traffic complexity by using direct routings, initiating actions early and avoiding excessive vectoring;
- asks for and accepts assistance when appropriate;
- delegates tasks as necessary in order to reduce workload;
- selects appropriate tools, equipment and resources to ensure the efficient accomplishment of tasks.

Although the above list is only provided for illustrative purposes, we can already see a number of benefits which it offers over the traditional approach. For example, the prioritisation of tasks and work tempo and the proactive approach are questions of attitude which need to be trained from the start. Although at the beginning of training, low traffic volume and complex-

What you need right now is a hot bath, an hour of relaxation yoga, a good meal and a glass of wine, but you know that's impossible... So a 5 minute cigarette break should do...

ity mean that the method might not make a huge difference to the overall outcome, it is important to insist on the execution of tasks according to an appropriate priority and with a pro-active focus. As traffic levels and complexity increase, the desired observable behaviour remains the same.

For the same reason, selecting the most appropriate tools and equipment for the task is another aspect which might be considered for early introduction in training. It could be argued that students must learn how to use all the tools at their disposal, and that allowing them time to experiment has no impact on the overall outcome of a simple exercise or during periods of low traffic volume and complexity. This is probably true, but it is also a fact that in this case we will be missing out the attitude element of the competence, i.e. considering the use of different tools then always picking the one most appropriate for the task.

Another good example is how students deal with interruptions and distractions. Apart from teaching students the knowledge and skills needed to resolve situations in the event of interruptions, we also need them to develop a conscientious attitude towards routine and effective resolution of interruptions and distractions. This is possible only if they can manage interruptions and distractions consistently and using the same techniques, even during periods in which there is plenty of time available and no real pressure to carry out other tasks. To put it simply, if the time is available, it is not acceptable to waste it.

How do we teach future controllers to ask for help when they need it and/or accept such help when it is offered, and how do we teach them to recognise a situation in which it is appropriate to delegate tasks? If we wait until students are overloaded and there is no solution other than delegation or seeking assistance and by then it is probably too late. If a student has never delegated a task before, it is highly unlikely that he/she will do it at times when the workload and the complexity become too high. However, if such judgements are integrated into training right from the beginning, students can opt for these actions a lot earlier and learn to appreciate both the potential benefits and likely consequences, there is a lot better chance of success.

Teaching all aspects of vectoring at all times is also a better option. Admittedly, vectoring is not a simple technique and it requires the development of a number of individual sub-tasks (usually on a part-task trainer) at an early stage of the training, but once these sub-tasks are well established, the aim should always be for the controller to achieve a desired outcome using the least possible number of control actions while also minimising any additional track miles which the aircraft must fly as a consequence. If this approach is applied consistently, it is not a problem to avoid excessive vectoring and to limit the number of simultaneous solutions during busy periods.

I am sure you can think of many other examples in your own environment in which it makes more sense to approach workload management training in an integrated manner even though this might seem difficult at first sight.

Looking at these examples, it is easy to see that workload management is quite complex and that a controller probably needs more time to develop this core ATC competence. However, despite its complexity, we can focus on these aspects of behaviour from the very beginning of training. Addressing workload management in a practical and integrated manner gives us a lot more time to teach and then consolidate the required skills and attitudes. In addition, this method provides an early opportunity to identify weak performance in workload management and gives us enough time to address any difficulties with personalised remedial action.

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