

NO HEADACHES HOMEWORK

Alan O'Donohoe suggests a strategy to make sure computing homework never causes any headaches again

Some of the challenges facing computing teachers can be mitigated through an effective homework strategy. This guide will suggest a simple, yet highly effective, strategy for homework that will help all computing teachers manage the challenges, as well as other people's homework expectations. The guide starts with a simple description of the strategy, and then explores each step in detail to help make computing homework a success in your school.

Computing teachers have voiced concerns such as:

- Computing lessons are too short; by the time any theory has been taught, there is little time remaining in lessons for problem-solving activities, programming and practical work
- When there is too much knowledge content in lessons, computing lessons can become dull and dry
- Teachers are expected to set homework regularly and to provide meaningful feedback frequently to students
- It can be difficult to set homework tasks that rely on computers, particularly if some students do not have access to the technology required

The value of homework

I'll admit that, in the early part of my teaching career, I really struggled to see any value in setting homework. I have since changed my thinking. I have learned that, when managed well, an effective homework strategy can actually nurture a very positive attitude among students, as well as alleviating some of the constant pressures on teachers – creating the effect of having increased contact time in lessons for the things that matter most.

I realised that the secret to achieving a state of 'homework nirvana' relied on me, the teacher, making some bold decisions from the start, then establishing regular habits for my students to develop as well as some new habits for me too. The thing about habits is, once

you've really got into the habit of doing something regularly – you can do it repeatedly without reminder and without requiring a great deal of effort.

The simple explanation

Explained most simply, this homework strategy operates with three strong features:

- Homework list: Teachers share a long list of homework topics with their class in advance
- Pupil responses: Students respond by producing single-page summaries per topic, per week
- Regular checks: Peer checks regularly take place in class, measured using a rubric, and check-scores are recorded

This guide goes on to explain the strategy in more depth:

The homework list - a list of topic headings, shared in advance

The teacher starts by creating a full list of topic headings for the full year ahead, prepared long in advance of the lessons. While this might seem like quite an undertaking, if you share the task among your teaching colleagues you'll be able to reduce the burden on yourselves and potentially have a more interesting and varied collection of homework topics.

Prescribe a single topic per week to your students, e.g. Week 1 – Topic 1, Week 2 – Topic 2, and so on. This means that, in a state school for example, there may be a total of 39 weekly topics, to take into account the number of weeks in an academic year. One interesting consequence of this approach is that your students will no longer have the excuse to inform you, "I was absent – so I didn't know what the homework was." If you receive requests to set work for students who are on long-term absences from school, you can simply suggest that they follow the homework programme at an appropriate pace.



■ Provide mini exercise books for students to write single-page summaries

Suggested examples of homework topics

For each topic, create a one-page summary that uses a combination of words and images to respond to the topic:

- Suggest how to choose a strong password
- Suggest how to select a suitable file name
- Explain the difference between the World Wide Web and the internet
- Describe the key features of a web browser
- Explain what encryption is used for
- Explain what a variable might be used for
- Describe some advantages of a block-based programming language

“ THE HOMEWORK STRATEGY CAN SERVE AS A USEFUL BACKUP STRATEGY

When creating your homework topic list, you could choose to follow a particular structure or have the topics follow certain themes related to areas of study, e.g. software, hardware, networks, programming, ethical issues.

It's important to recognise that the homework topics need not closely match the intended learning content of every lesson. It is considerably more difficult to plan for every homework topic to match the lesson topic for any given week, since that would require the

teacher to know a long time in advance what will be taught in each lesson. Instead, the topics could more broadly encompass the learning of the whole year, and may even touch on some topics that would not normally crop up in class.

There is no need to slavishly stick to the list every week. As the teacher, you always have the option available of deviating temporarily from the prescribed topic for a particular week. You may exercise this option when there is a more pressing need to set an alternative in order to reflect something that is current – but the list always provides the default topic.

In the very busy periods we often find ourselves in as teachers, the list becomes a real time-saver. By getting into the habit of setting every class their topic homework each week, you are far less likely to forget to set homework and will not struggle to choose an appropriate homework task under pressure. I would question whether the topic list needs to be that varied for different age groups – if the topic descriptions are written in a more general manner, they are more open to interpretation by learners.

A useful contingency

This homework strategy can serve as a useful backup strategy for when the planned taught lesson cannot proceed as intended. Imagine a scenario during which at the last minute, your Computing class have to be redirected to another classroom with no computers available. The homework strategy provides an alternative plan for a lesson until normality can be resumed. You might decide to lead a more traditional 'chalk and talk' lesson focusing on the current or next homework topic, while the issue keeping you out of your classroom is resolved. ▶



“ TRY TO FIND A SMART WAY TO COLLECT THE CHECK-SCORES

Alternatively, if your travel to school has been disrupted or delayed, your colleagues could ask those students already in class to start on the week’s homework topic until you arrive.

Ensure that the list is easily accessible

Take steps to share the list publicly with your students and others, where appropriate. By making the topic list easily accessible, it ensures there are a minimum number of barriers to prevent students from completing homework. Additionally, you can also share it with parents. If you host an online version or cloud-hosted document, e.g. a Google Doc, you can share the list easily and then use a custom URL, e.g. TinyURL or Bitly, to help keep it memorable.

An alternative to maintaining an online list may be to print copies out for students to glue into their homework books.



With a sound strategy in place, homework is no longer a headache

Provide exercise books for the purpose

Provide mini exercise books specifically for the purpose of homework. Lots of exercise options are available, including non-ruled. We chose a mini exercise book, A6 in size, which worked perfectly well. It was just compact enough to fit in a blazer pocket, and did not require a huge amount of effort from students to fill a single page.

While some computing teachers may balk at the suggestion of using exercise books for homework, I found that it led to a more level playing field and reduced the chances of things going wrong. My experience has been that requiring all of the students I taught to all be able to use technology for the homework just created additional reasons for excuses, such as “I couldn’t log in”, “My device needed charging”, “My laptop is broken”, “I forgot the webpage”, “My account has been suspended”. I told them that if they didn’t have their book in class, they would score zero in the peer checks.

Single-page summaries per topic

With this strategy, students are expected first of all to study the topic independently. Ideally, this activity takes place out of lesson during homework time. Students then summarise their findings using sketch notes. We required our students to create one single-page summary for each individual topic every week. We worked on the principle that if a student couldn’t fit their summary on a single page, then they were doing too much or it was not an effective summary. It’s important to stress that there is much more activity involved in the homework than simply filling a page, since some prior research is required. The single page summary is just one way of evidencing that the research has actually taken place.

In my experience, some teaching groups have grasped this approach more readily than others. When certain classes or students have required more support to achieve the desired standard, I’ve devoted some lesson time toward achieving that. This has included sharing examples of the expected standards.

Peer-check in class using a checking rubric

The trick to reducing the marking burden on the teacher is in using the skills of the teacher to do the things that only the teacher can do. While there is a lot of learning potential in requiring students to peer-mark each other's work, the additional bonus is that it saves the teacher from unnecessary marking. To keep the peer checks smart and efficient, we used a simple rubric that awarded a check score out of four, depending on the quality of the response.

The first time the peer checks take place, it will require a certain amount of explanation. After using this approach in lessons for a few weeks, you'll find that the peer-checking exercise runs like a well-oiled machine and can be conducted in around five minutes. You may choose to peer-check homeworks every week, or every fortnight, and do two together at the same time.

A simple example of a checking rubric:

- 1 mark for correctly recording the title and date of the homework
- 1 mark for written notes
- 1 mark for inclusion of diagrams/sketches
- 1 mark for exceptional presentation
- 0 marks for no evidence of homework

I would periodically take photographs of samples of responses for the purpose of having a gallery of examples to refer to.

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Scores are collected into the teacher's mark book. Try to find a smart way to collect the check-scores, using the fastest, most efficient manner available to you. You may need to experiment with a few different approaches until you find the technique that suits you best of all. The approach that suited me involved using some voting software which would display the number options on all screens; students would simply select the number that matched their check score. This took a matter of seconds and saved me manually entering the scores. This system also assisted me to administer the attendance register, since it doubled up as a speedy way for me to check who was in class.

Share progress on a scoreboard

There is a principle that 'teams perform better when someone is keeping score'. After I collected in the peer-check scores, I displayed the raw scores in a chart and shared this with the class. I told students that I would be happy with a score of 3 for any homework, where 4 was the maximum score. However, any homework summaries which scored 2 or less would be below the expected standard and as such need to be rectified before the previous lesson. In some cases, the issue could be remedied there and then, ready to be re-marked at a later date.

Identify issues early on and intervene

Once the teacher is in the habit of recording the peer-check scores regularly, it facilitates the reviewing of pupil progress. This means that issues can be identified early on and rectified. Some issues may require high levels of intervention, e.g. facilitating additional opportunities for students who are lagging behind expected completion and/or below the expected standards.

If you'd like some free, friendly advice about planning your computing homework strategy, contact author Alan O'Donohue at alan@exa.foundation. (HW)



■ Voting software is used to display students' check-scores on all screens