Target setting: a case study looking at how greater collaboration can impact the effectiveness of target setting

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Abstract:-This research looks at how target setting and assessment for learning can improve the progress of students. In particular, we consider by means of a case study how involved students should be during the target setting process. Our findings generally concur with the research [1] since the student attained all targets which she was involved in setting, while she did not think she had reached all those teacher set targets.

Keywords:- Assessment for learning (AfL), case study, feedback, target setting.
Received: October 10, 2022. Accepted: November 5, 2022. Published: November 18, 2022.

1. Introduction

THIS research looks at how target setting and assessment for learning can improve the progress of students. The Assessment Reform Group [2] define assessment for learning (AfL) as "the process of seeking and interpreting evidence for use by learners and their teachers to decide where learners are in their learning, where they need to go and how best to get there". After briefly considering previous research, I will outline a small case study I undertook in order to assess the impact of target setting on student learning and reflect on how the study affected student motivation and performance.

The findings of this paper are drawn from research undertaken at a medium-sized sixth form college in the United Kingdom (UK). The college offered a broad range of academic and vocational courses, including a wide number of GCE Advanced Level provision. In particular, my case study focuses on a randomly selected student from a Post-16 GCSE-resit class. In summary, my findings generally concur with the research of Hannafin [1] as the learner attained each target that they were involved in setting, while, they did not think that they had reached the targets that had been set by the teacher.

2. Background Literature

A wide array of research exists regarding target setting within education. A good deal of it points to the value of AfL as an aid when setting goals within a teaching strategy. A brief summary of some of the research within this area follows.

Office for Standards in Education (OFSTED) [3] state that effective targets "help schools to articulate clearly what is expected of each pupil, class or group or indeed of the school as a whole". Teachers should use AfL in order to set specific, challenging learning goals with their students in order to improve learning [4].

Dagley [5] reports that the key principle of AfL is in order to give learners a target or next step to aim for, while, Boaler [6, Chapter 4] adds that it's success is based upon students having "a full and clear sense of what they are learning, of where they are in the path towards mastery, and what they have to do to become successful".

It is worth adding that despite some clear advantages to AfL, there are both good and bad ways in order to implement this [7]. In particular, feedback should focus on how the individual can improve rather than how well they have when compared with others [8], while, the targets must be seen as "relevant or meaningful by those involved" [9].

The importance of setting targets has been now generally accepted by education practitioners as the majority of schools within the UK make use of target setting [10] and they also provide a key strategy for school improvement [11]. Note that simply setting a target does not mean it will be achieved [5].

To provide some accountability, Martinez [12, pp. 1] suggests that the targets should be "owned by the learner" in order to provide cognitive, emotional and motivating benefits. Transferring control from teacher to learner has become more common [1] as students are encouraged to take a greater responsibility for their learning [10]. In particular, there is evidence (see e.g. [13]) that a target is meaningful only if the learner is truly committed to achieving them and in order for a target to be valid, it must be perceived as valuable [14].

Another key factor is the importance of setting achievable targets. In particular, there is a need for demanding yet achievable targets since "without challenge,

learners will not achieve to the best of their abilities, but if targets are not achievable, demoralisation and disengagement will follow" [12, pp. 1]. However, if targets are unachievable, then setting these is a senseless task and demoralisation and disengagement will follow [9,12]. Further, it clear that targets must be measurable, however, one must take care to not use those targets that are easily measured "rather than those that are actually worth measuring" [12, pp. 2]. Finally, in terms of outcomes, the learner's focus should not be on comparing performance with peers, but instead it should be on their own progress and on those steps they must take to achieve the desired goal [12].

3. Research Design

The research was undertaken at a medium-sized sixth form college in the UK. The student was selected from their class via a simple random sampling process [15, Chapter 4] and their characteristics have some similarity to their class population as a whole. The student was from a mixed-attainment GCSE resit class of twenty students. The student received an F in their initial examination and was retaking with the aim of attaining C grade. As a lower attaining student, we hoped that the study would help the student achieve a C grade because AfL is a powerful tool "for improving the learning of low attaining students" [12, pp. 3].

Similarly to [16], we began the case study by firstly outlining the plan for the four weeks and by asking the learner to compose a list of their goals, both academic and nonacademic, as shown in Figure 1. By gathering this initial information, we had a way of passing ownership to the learner and that may motivate them as suggested by Hannafin [1], who states that "students who set their own learning goals attain more of them".

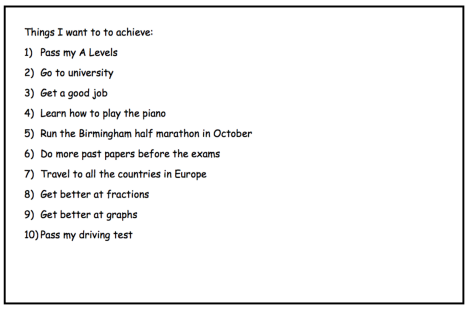

Fig. 1: The learner's initial goals, both academic and non-academic.

We decided to test the suggestion that learner are more likely to meet targets that they have created [1]. In particular, for comparison, the student had to:

- create one learning target based on the goals they listed,
- discuss with their teacher in order to create a target together, and
- be given a target solely by their teacher.

In particular, the student was given three targets to work towards, namely, a student created, a jointly created and a teacher created target.

Acee, Cho, Kim and Weinstein [16] stress the importance of students having clear and measurable targets. In light of this, upon setting the third target the teacher clearly explained the goal and the effort required to achieve it. Further, some problems and model solutions were provided to the student in order to demonstrate the level of work required to attain the target. It is important to keep targets under review (see e.g. [12, pp. 12]) and it is critical that time frame has been specified [16]. It was agreed to review progress after a two week period in consequence.

Upon meeting for the first time, their progress in attaining each target was discussed. In particular, the learner's performance is set out in Table 1. The data concurs with the research [1] since the leaner met both targets they were involved in creating but not for the target that their teacher had had set. This may linked to a learner underestimating their development and, as such, setting more easily attainable goals than their teachers.

Subject	Set By?	Week	Met (S)?	Met (T)?
Fractions	S	1	Y	Y
Plotting	J	1	Y	Y
New Line	T	1	N	N
Substitute	S	3	Y	Y
Exchange	J	3	Y	Y
Equals	T	3	N	Y

Table 1: This table shows in the second column who set each target, namely the student (S), jointly (J) or solely the teacher (T) and in columns four and five we show if the student and teacher think each target was met, respectively.

Three new targets were set for the next two week period, using the same process as previously. The learner's performance when compared with their targets (Table 1) again concurs with Hannafin's research [1] as on self-reflection the student thought they had met both of the targets she was involved in creating, but not the target that their teacher had set. Despite this, in their teacher's opinion the learner had achieved this target and attained all of their learning goals. Hannafin [1] explains this underestimation of progress by suggesting that students evaluate their own progress more favourably upon setting their own learning goals.

Undertaking small scale research, as in this case study, has both advantages and disadvantages. For example, one should be careful to not generalise the results of such research as the findings require further testing to corroborate them before firm conclusions can be drawn [15, Chapter 9]. Furthermore, it could be argued that despite the pupil being chosen at random, is the selected pupil actually representative more widely. However, provided these limitations are recognised, there is merit in conducting such research. In particular, the benefit of such a case study is that it facilitates the col-

lection of more individual views, which may not be so easily obtained in larger scale projects [15, Chapter 11].

4. Analysis

As mentioned previously, the case study began by asking the learner to list ten aspirations, academic and non-academic, which were important to them (see Figure 1). The goals they listed relating to mathematics were: "improving at fractions and graphs, doing more past papers and passing my A Levels". This demonstrates their focus on doing well in examinations, which is no surprise since this is a sixth form college environment, where examinations are the constant nuclei of attention for students and teachers alike.

To devise the targets, the teacher firstly asked why fractions and graphs were listed. The student suggested that their teacher had indicated they struggled with these topics and knew they could improve. In particular, the learner suggested as a target that they would "get better at fractions". Bearing in mind work [16] which suggests that clear attainment enhancement is more likely when specific academic learning goals are set, it was suggested that they select some classwork, past papers and a worksheet to do during the next two weeks to judge progress.

The student and the teacher then worked together to devise a second target based on graphs. This was another topic that the learner had identified and their mock examination demonstrated that their method did not align with the suggested mark scheme. It is worth noting that the student tended to draw graphs freehand without creating a table of values and used small dots, which were indecipherable to the assessor, in order to indicate the location of each point. It was agreed for as a second target that they would create a table of values associated to each graph she drew and plot each point with a cross. As in the first target, it was agreed to measure progress using relevant classwork, past papers and a worksheet. Further, it was explained that rather than trying to complete all of the questions, the student should focus on creating a table of values and using crosses for each point in all the graphs they plotted.

As a third target, we focused on how to improve upon the layout of the learner's work. Here this target was suggested as they often completed several simplifications and calculations on a line, implying a lack of understanding about the meaning of the equals sign. Progress in this case would be measured by looking at the classwork and past papers that they completed and as an aid, some some model solutions demonstrating how to set work with a new line for each step were provided.

Then we met to review progress after two weeks. With respect to the first target, namely fractions, the improvement was stark. The student was now clearly showing a method and so was making significantly less mistakes than before. While their method was not the most efficient, they were using it accurately and obtaining correct answers. Note that fractions had been an area of weakness for this student and this progress meant it was now an area of strength.

For the second target, namely plotting graphs, their work again demonstrated exemplary progress. Now, the student was creating a table of values and plotting graphs accurately using crosses. However, some graphing issues were noticed when substituting values into the function to create the table of values. In light of this, it was suggested that they could improve accuracy during substitution and that this could be a good next target. This was agreed upon and we would meet again to review progress in a similar way.

The learner additionally demonstrated progress in attaining the third target. The layout of work was logical and systematic, answers were circled and a new line used for each step. However, a sporadic use of the equals sign when simplifying algebraic expressions and solving linear equations was noticed. Dixon and Haigh [4] point to the importance of reflecting on targets with students and, with this in mind, possible improvements that could lead to achieving the target were discussed before the teacher then suggested building on this progress by making use of a new line for each step in algebra.

The meaning of the equals sign was also discussed at this point an, to aid progress, a spot the mistake activity was provided. This asked the leaner to highlight where the equals sign was used incorrectly and explain why it was wrongly used. This forced them to think about the symbol, which we hoped would mean that they use it correctly in the future. Further, it was agreed to review a new target based the spot the mistake activity and relevant classwork and past papers in two weeks.

Finally, the learner was asked what else they wanted to focus on during the next two weeks, upon suggesting they looked through her recent examination paper if they did not have a topic in mind. In light of this, they asked to look at currency exchange problems, as this was a topic they completely avoided in the exam. When asked what they wanted to achieve and how we would actually measure this, they said "to be able to change between currencies easily" and suggested practicing examination questions to demonstrate progress. The vagueness of this response is in keeping with Dagley [5] who suggested that overly general targets may follow when the teacher hands the student responsibility for target setting.

The suggested target was agreed upon and additionally the teacher set two further questions to work on. This was since we wished to ensure progress was not solely focused on passing an examination since "teaching children to pass tests benefits no one and renders school boring for the able, and disastrous for the less able" [14]. After a further two weeks, we met to assess their progress against the second batch of targets and review the target setting exercise as a whole.

Boaler [6, Chapter 4] reports that self assessment teaches learners about what constitutes high quality work and provides them with information on their own understanding. Therefore, we asked the learner how they thought they had performed in previous two weeks. Their comments chimed with the finding that students

evaluate their progress more favourably when they have set their own goals [1] since they believed that they achieved both targets that they were involved in setting, while, not the target was set by the teacher.

On the third target, the student indicated while they was using a new line for each new operation, their understanding of the equals sign remained unclear. Looking through their work, the teacher demonstrated that they had correctly highlighted when an equals sign had been incorrectly used and their classwork showed she was now using the equals sign more logically and attempting to use a new line for each operation.

Reviewing the learner's progress on substitution, their work was clearly more accurate than when they did this in combination with plotting graphs. Similarly, they had answered all exchange rate questions correctly. Finally, we asked two final questions to see if they understood the techniques demonstrated. Here the learner struggled to talk through their workings so we asked how they knew whether to multiply or divide. It seems that they simply memorised a rule that since they stated "when we go on holiday we are going to have a nice time so we multiply while when we come home we will divide". This demonstrated that the learner had a method which did not work in generality and left them struggling when changing between two currencies which did not include sterling. This highlights the importance of choosing tasks which emphasise key ideas and allow students to consider misconceptions as they progress towards mastery. Since the learner had shown fluency in answering the past paper questions on currency, they had made sufficient progress to attain the learning goal, however, we agreed to do further work to allow fluent conversion between all currencies.

Upon reviewing all targets the learner worked towards during the case study exercise, it is fair to conclude that they made good progress. They are now equipped to assess their own performance in a meaningful way in future. Further, they will be able to continue setting learning goals, on their own or with the support of teachers, and can use feedback she receives on their work to self-assess her progress.

5. Conclusion

The four week exercise with this learner was hugely beneficial. However, it could be argued that this improvement is linked to the time she now has to revise for the examination, since this has been shown to increase attainment [17]. It would therefore be unwise to suggest their progress is solely due to target setting. At the end of the exercise the learner was asked how they had found the exercise and how they thought it could be improved for others. They said "It helped me enormously since over a couple of weeks my marks have got better and I'm more confident doing maths. I feel the targets we set together were best since we talked about the areas I needed to work on and you could also add anything specific that I should think about. I'm glad I had this opportunity and hope other students get the same chance in future".

It is hoped that this research provides some appreciation that giving students freedom and responsibility to create their learning goals is a positive step. In particular, it could pay dividend with some highly motivated students and in turn, yield effective performance. In line with research [16] and the feedback from this case study, one should ensure targets are specific, measurable and meaningful to the students concerned.

However, it must be remembered that unlike in this case study, time to formulate meaningful targets with students is an issue for teachers. Here it was possible to work with a student on a one-to-one basis but expecting teachers to do this way with each learner is unrealistic. One suggestion is that one could provide a high-level of support early in the year, where support is set individual targets. This support could then be reduced over time as students gain more understanding of how to go about setting meaningful targets [1].

This task does not need to necessarily be onerous for teachers. In particular, this case study supports Hannafin's [1] suggestion that teachers can undertake do this most effectively by handing responsibility for setting goals to the students themselves. Further, that students who are involved in setting their targets will be more engaged in attaining them and it will deliver the best possible outcome for both teachers and students alike.

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