

Success from failure: How learning goal orientation influences children's use of help during an interactive science task

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Aim - We seek to extend previous research into learning goal orientation (LGO) and children's help strategies.

Do mastery-oriented children seek different sorts of help from performance-oriented children? Do they also differ in how they use help once they get it?

Learning Goal orientations typically include:

Mastery orientation –

- desire to improve competence
- greater determination at the onset of difficulty
- evaluate according to own previous achievements

Performance orientation –

- typically driven by evaluation against others' performance
- demonstrations of ability – or avoidance of demonstrating low ability
- less persistence in the face of difficulty

Importance of effective help seeking

Effective help seeking	Poor help seeking
Fosters a higher appraisal of own ability	May negatively affect a student's appraisal of their ability
May enable students to monitor progress more effectively	May lead students to feel more inclined to give up
May lead to a greater understanding of future help seeking needs	May lead to similar help seeking dilemmas in the future
Gives students an understanding of the process of problem solving	May lead to more covert forms of help seeking such as copying

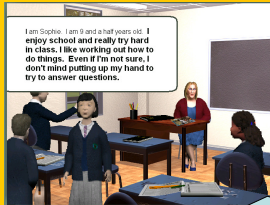
Method -

- Individual interviews to assess LGO
- Classroom Interactive science task, Ecolab II.

- Assess learning with a pre- and post-test (study 2 only).

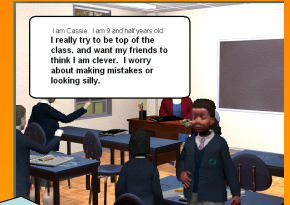
Participants – n = 27 (Study 1) x n = 29 (Study 2)

Mean age 9yrs, 6 mths, from two semi-rural primary schools in East Sussex, England



Mastery-oriented child

Each child's LGO profile was assessed using both a semi-structured interview and two classroom scenarios depicting a mastery-oriented child and a performance-oriented child. Children were asked to predict how each character might respond to a given task, to think about their own behaviour and then select which of the two characters was most like themselves



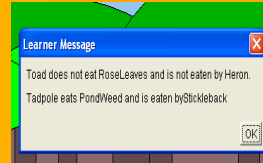
Performance-oriented child

Two raters scored the session as a whole looking for characteristics typical to each orientation as explored in the literature.

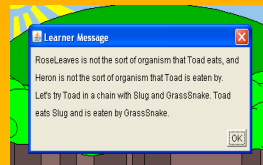
Orientation	Learning Motivation	Help Strategies	Task Choice
Mastery	"Even if I'm wrong I can still learn something"	"If I got stuck I would write everything down I do know and then get a book to find out some more."	"I'm going to go for the one that I think I need to work on"
Performance	"I would feel scared if it was a test because I might get lower than other people"	"I never put my hand up in case I look silly"	"I would choose [task 1]" "It's a bit easier, I can tell already"



Ecolab Web View



Study 1 - high level non specific clue



Study 2 – high level specific clue

Ecolab II

Educational software for 7 – 11 year olds (UK Key Stage 2) ecology curriculum to help understand food chains and webs. The software addresses some metacognitive difficulties by monitoring children's help seeking and adapting the on-screen prompts accordingly.

Ecolab automatically offers a choice of four clues:

- Clues 1 & 2 low level instrumental help-general encouragement.
- Clues 3 & 4 high level executive help- a fuller generic answer regardless of organisms the child is working with.

The child can then choose which level of clue they prefer.

If children consistently choose a clue level which doesn't appear to help, Ecolab may suggest they try a higher or lower level.

The same software was used for both studies, but a few improvements were made for study 2

1. Audio was added to all the on-screen prompts to encourage children to attend to the information given on screen.
2. Non-specific examples in the high level clues were changed to reflect the specific organisms and food chain the child was working on, to encourage perseverance with the same food chain.

Results

Study 1

Performance-oriented children gave up on the food chain they were working on significantly more often than mastery-oriented students after making a mistake and receiving a clue, $F(1, 17) = 4.44, p < .05$. When we looked at the differences in clue level, performance-oriented children give up more often than mastery-oriented children when choosing a high level clue. There were no significant differences between groups with the low level clues.

Study 2

After changing the high level clue wording to link to the child's current food chain, we then found that performance-oriented children gave up more often than mastery-oriented children after selecting a low level clue, for example "That's not quite right, have another go". $F(1, 23) = 5.36, p < .05$. There were no differences in this study with the high level clue.

Pre- and Post-test Learning Gains

The pre test scores showed a significant difference between performance and mastery-oriented children with mastery-oriented children achieving a significantly higher score, $t = 2.67, p < .05$. There were no significant post test differences between the groups which means that both groups of children had similar post test scores.

Part 3 was especially challenging as an abstract question which required generalisation of information. Mastery-oriented children showed a greater ability than performance-oriented children to generalise information successfully during the pre- test, $t(27) = 2.67, p < .05$. By post-test these differences had disappeared

These two studies

- Give new evidence of behavioural differences between mastery and performance-oriented children.
- Show a possible negative effect for performance-oriented children who, despite showing the most improvement between pre and post-test scores, also show an inclination to give up on a task once they know they have made one mistake.
- Performance-oriented children also show a propensity to give up if the help they receive is not directly related to the food chain they are working on.

Children need to evaluate their learning accurately so as to recognise when and where they require help. It is then also important to find ways of offering help, or encouraging children to seek help, to keep them task focused and to encourage perseverance. Research needs to look at two skills; the ability to seek appropriate help as well as the ability to generalise information to the process of problem solving.