Flow Theory in Classrooms

A Study of How Homework Affects Learning

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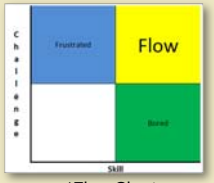
Abstract

This study involved using student surveys to look at the correlation between the two main flow variables, skill and concentration, as well as correlations with other variables that are indirectly related with flow. Specific case studies of movement between the flow categories from week to week were also analyzed. A few major results are the significant correlations between interest and challenge and between challenge and concentration.

What is Flow?

As defined by Mihaly Csikszentmihalyi, **flow** is a state in which people are so involved in an activity that nothing else seems to matter. It is being in a state of mind that is comparable to being "in the zone". When in flow, time seems to go by faster and all of your concentration is going towards one thing.

- Two Main Flow Variables
  - **Skill**- Too much skill can cause boredom but not enough skill can cause frustration
  - **Challenge-** Too much challenge can cause frustration but not enough challenge can cause boredom



*Flow Chart

- The main goal of flow is to balance the challenge and skill so the task isn't so hard you get frustrated but hard enough that you need to concentrate in order to complete the task.
- The graph above shows the categories of flow. It shows the even balance between skill and challenge that causes flow.

Other Variables Used

- This study used three more variables to help further analyze what students thought of their homework.
  - Interest
  - Boredom
  - Concentration

Correlation Results

- **Interest**
  - with Challenge (.725)
  - with Concentration (.657)
  - with Skill (.445)
  - with Boredom (-.404)
- **Concentration**
  - with Challenge (.441)
  - with Boredom (-.394)

*Correlation table for week 4

- Note:
  - The six correlations above occurred in at least three of the four weeks of analysis
  - The correlation coefficients were all at least at the 95% confidence level

Correlation Conclusions

- One unexpected correlation found was the correlation between interest and challenge.
- The negative correlation between interest and boredom shows the students were reading the surveys.

Case Study Results

- Graphed the week to week movement of the 15 students with complete data
  - 3 of them were in flow in week one
  - 5 of them were in flow in week four
- A good example of a student who moved in the direction we were hypothesizing is shown below

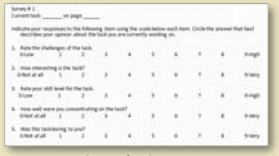
- The student moved from bored in week 1, to frustrated in week 2, to flow in week 3 and week 4.
- However, most students did not move in this pattern, but rather stayed in the same general vicinity throughout the study.

Case Study Conclusions

- This study shows that there is the possibility of entering a state of flow while doing homework.
- Adjusting homework seemed to impact the students in various ways, but mostly had a positive affect.

The Study

- Four weeks of surveys
- Students took six surveys each week
  - A sample survey is shown to the right
- The students took surveys on two homework problems that were chosen from each assignment
- Every weekend the data was organized and the weekly averages were found
- The students were then grouped into categories based on their skill and challenge averages for that week:
  - **Flow Group:** Skill and challenge both above 5.5 or both below 5.5
  - **Frustrated Group:** Challenge above 5.5, but skill below 5.5
  - **Bored Group:** Skill above 5.5, but challenge below 5.5
- Based on the category the student was grouped in, a new problem set would be assigned for the next week



*Sample Survey

Resources

- Csikszentmihalyi, Mihaly. Flow: the Psychology of Optimal Experience. 1st ed. Harper & Row, Publisher, Inc., 1990.
- Csikszentmihalyi, Mihaly, Kevin Rathunde, and Samuel Whalen. Talented Teenagers: the Roots of Success & Failure. Cambridge UP, 1997
- Hlas, Chris S. (2005). Student perceptions of engagement, challenge, scaffolding, and confidence when solving high school algebra tasks. Unpublished doctoral dissertation, University of Iowa.

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